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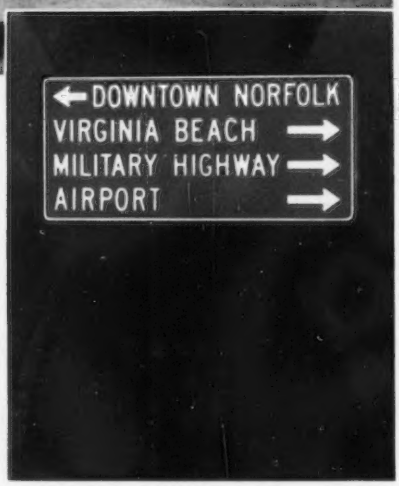

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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

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COVER: Ground was broken on 38th Street near the West Side Highway (background) in Manhattan on September 25, 1952 to start the construction of the new third tube for the Lincoln Tunnel, which upon completion in 1957 will double peak hour capacity of this vital Port Authority of New York facility. Public officials of the States of New York, New Jersey and the City of New York, joined Chairman Howard S. Cullman of the Port Authority in the first such ground breaking ceremony ever televised. The marked square in front of the speakers platform is where the Manhattan Ventilation Building shaft will be sunk to grade from which tube will then extend to its easterly exit portal in 38th Street some 1750 feet east of shaft. The traffic and planning aspects of this important undertaking are described in Messrs. Cherniack and Gilman's article in this issue. TRAFFIC ENGINEERING hopes to carry an article on this project for the benefit of construction engineers in a future article.

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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Frankly Speaking

THE RAPID GROWTH of automotive traffic on the public streets and highways throughout this country since the termination of World War II has placed a particularly heavy responsibility on the traffic engineers. In many instances heretofore a broad general knowledge of traffic was usually sufficient to enable an engineer to do a reasonable job in correcting the traffic evils in his location.

Today, the picture has changed. Controlling today's traffic requires specialization. Traffic engineers everywhere are "on the spot" because at the moment, traffic is everybody's business. Today the implications of traffic are reaching more deeply into our daily lives. Bottlenecks caused by insufficient street space, conflicting turns, inefficient regulations and control are common every day occurrences in many of our urban areas. This congestion means that valuable time must be consumed by the drivers and other occupants of these vehicles. This may be the time of the housewife, the merchant, purveyor, or the cross-country hauler. Time means money. When traffic engineers permit congestion to exist, then severe criticism from the public is the ultimate result.

Newspapers add to the traffic engineer's irritation in many cities. They sometimes hamper engineering efforts because they fail to realize that inadequate budgets, insufficient trained personnel and the fact that the existing street pattern cannot be changed to a great degree, all make it difficult for the engineer to do the job he would like to do.

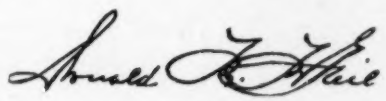
In some cases, lack of cooperation from police officers will seriously interfere with the ultimate objectives of the traffic engineer. An intersection which is perfectly designed from an engineering standpoint can become a trouble spot if the officer at that point fails to control the intersection properly. Lack of enforcement signs (particularly no-parking restrictions) also add to the censure the engineer receives. All the traffic signs an engineer can install are of no value if the police fail to enforce them.

What is the answer to some of the criticism aimed at engineers everywhere? The answer lies in making the best use of all the services and knowledge at hand and spending more time to develop new ideas and techniques.

Much of the specialized knowledge of the respective members of the Institute of Traffic Engineers is not being put to sufficient use by the entire membership. Studies which have been made by some members can be of invaluable help to many other members throughout the country if they will only let their needs be known. Working standards or formulas have been developed for the placement of regulations, protective signs and other traffic equipment and these should be used and developed to an even greater degree. Most engineering problems are not unique. Someone has worked with the same kind of problem in some other city and it is entirely possible that a satisfactory solution has been found. A greater exchange of ideas among the members of the Institute of Traffic Engineers is something that also will help immeasurably to solve the difficult situation more rapidly.

This is not the time for traffic engineers to sit idly by. It is the time when new approaches to the problem must be found. Your former officers foresaw this condition and established the Technical Council and its many Committees to cope with the specialized traffic engineering problems. These Technical Committees (to which nearly every member of the Institute of Traffic Engineers has been appointed in accordance with his specialized knowledge) provide an ideal medium for members to develop new ideas and technique. It is hoped that considerably more time and effort will be given by each member to the work of his respective Technical Committee.

An aroused public demands that traffic engineers come up with the answers. It can be done and we are the group charged with that responsibility.



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Lincoln Tunnel Third Tube to Expand Trans-Hudson Vehicular Capacity

By Nathan Cherniack (Mem., ITE)
Transportation Economist
and
Roger H. Gilman (Assoc. Mem., ITE)
Assistant to Director of Port Development, The Port of New York Authority

On September 25, 1952, ground was broken for the start of construction by The Port of New York Authority of the $90 million Third Tube of the Lincoln Tunnel.

This start of work followed by a year and a half the Port Authority's announcement in March 1951 of its plans for this vital trans-Hudson transportation facility linking northern New Jersey with midtown Manhattan. Our plans were approved last year by the Governors of New York and New Jersey and the U. S. Army Engineers. However, under the statutes governing the Port Authority's construction of vehicular crossings, the municipalities must approve the plans for connections to their local streets. The City of New York did not approve these connections until July 1952 and, at this time, approval by the Township of Weehawken is pending.

Several Third Tube contracts have already been awarded, including those for the New York ventilation shaft and for the cast iron and steel segments of the rings which form the outer lining of the under-river tube. We expect to complete and open the Third Tube early in 1957, which will give the Lincoln Tunnel two more vehicular lanes between Weehawken, New Jersey, and West 38th Street, Manhattan, making six lanes in all at this location. The present south tube of the Lincoln Tunnel was completed in December 1937 and was operated in both directions of travel until the north tube was opened in February 1945.

Fig. 1
An evening rush hour scene showing backup of New Jersey-bound traffic for the Lincoln Tunnel at 38th Street and Tenth Avenue, Manhattan.

Trans-Hudson Vehicular Traffic Expanding at Accelerated Annual Rate

At the present time, ten vehicular crossings carry traffic over, under and across the Hudson River, between the Battery at the south end of Manhattan and Yonkers, New York, which is about five miles north of the northerly tip of Manhattan Island. These crossings consist of the Holland Tunnel, Lincoln Tunnel and George Washington Bridge, operated by the Port Authority, and seven ferry routes operated by railroad and private companies. In 1951, traffic using the ten crossings totaled 64.0 million vehicles and in 1952, will add up to about 69.2 million vehicles.

In the twenty years between 1931 and 1951 (which includes the period of economic depression of the early 1930's and wartime gasoline rationing of the early 1940's), trans-Hudson vehicular traffic has expanded by about 36 million vehicles, or an average growth rate of 1.8 million vehicles a year. In the second half of this period, the decade between 1941 and 1951, the annual expansion rate amounted to 2.2 million vehicles; in the past five years, from 1946 to 1951, the rate was 4.1 million vehicles a year; and in the last three years, from 1948 to 1951, the annual rate was 5.5 million vehicles a year. In 1951, traffic increased by about 5.7 million vehicles over 1950, while the 1952 gain is estimated at about 5.2 million vehicles.

Trans-Hudson Vehicular Crossings Approaching Their Capacities

The Port Authority's current estimate of the total annual vehicular capacities of all trans-Hudson facilities is about 83.5 million vehicles. This estimate of the combined capacity reflects the lower-than-peak hourly volumes during certain hours, days and seasons of the year. On the basis of this estimate, there appears to be a remaining margin of aggregate annual capacities that could absorb an additional 14.3 million vehicles per year.

This remaining margin of trans-Hudson annual vehicular capacity, of which only a 10.0-million vehicle margin remains at the three Port Authority crossings, will be absorbed in the

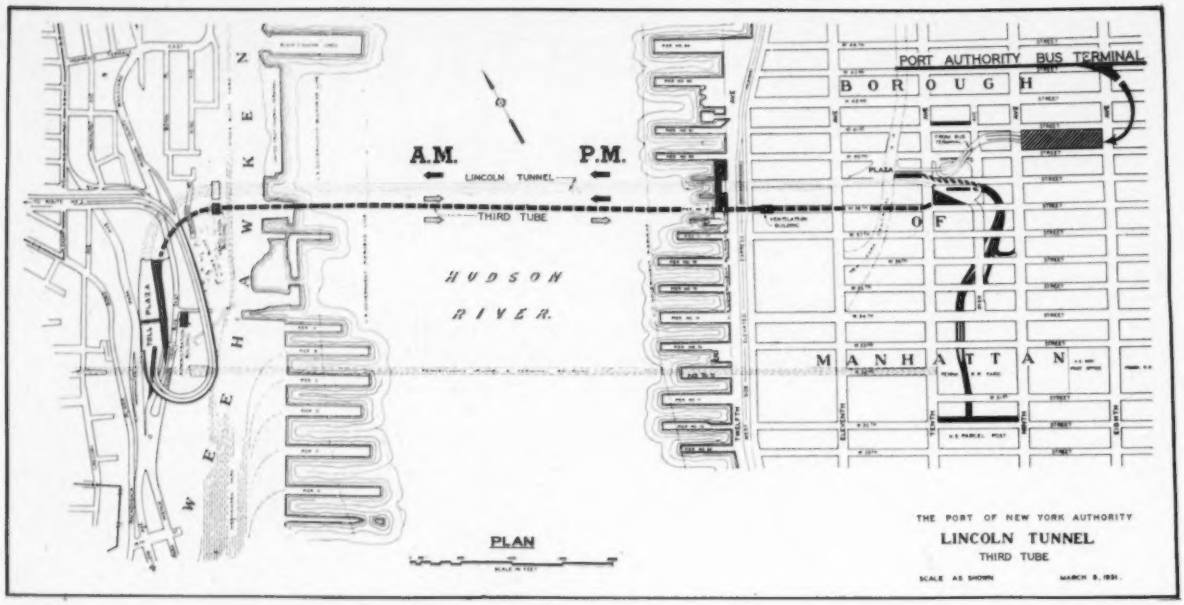


Fig. 2

The new third tube will be built to the south of the two present tubes. A new underpass in Manhattan from the tunnel portals at 38th Street will be built as far south as 30th Street.

next few years. The actual number of years will depend to some degree on the extent to which lack of capacity retards the future rate of traffic increase.

The Port Authority staff has kept a close watch on the mounting traffic flow between New York and New Jersey. Realizing the urgent need for additional interstate crossing capacity, we have started construction of the Lincoln Tunnel Third Tube and are working on plans for an entirely new Fourth Hudson River Crossing.

New Peripheral Vehicular Crossings Can Relieve Present Tunnels and Bridge to Manhattan Island

Peripheral crossings in the New Jersey-New York metropolitan area, which do not touch Manhattan Island, could be constructed as a relief to the present and future facilities. Such crossings would divert some of the trans-Hudson traffic away from Manhattan, which is the most congested core of the New York Metropolitan District.

In order to determine the relative effectiveness of peripheral routings versus a Manhattan terminus for new interstate crossings, the Port Authority conducted a comprehensive origin-and-destination interview survey in October 1949. About 135,000 motorists and truck drivers were questioned as to the origins and destinations of their trips. These interviews were made at all New York-New Jersey crossings of the Hudson and of the Arthur Kill (the channel separating Staten Island from the New Jersey mainland). This involved two of the three Port Authority Staten Island bridges, the George Washington Bridge, the two tunnels, and eleven ferry routes extending from Yonkers, New York, on the north to Perth Amboy, New Jersey, which is some twenty miles south of the lower tip of Manhattan.

Interviews sampled traffic for 18 hours each on a weekday, a Saturday and a Sunday. They covered from 20% to 50% of the total traffic handled during the interviewing periods. The statistics of auto and truck driver interviews were then adjusted to 24-hour figures on the basis of regularly compiled hourly auto and truck traffic volume data to obtain daily origin and destination flow patterns. These represented a close approximation to an annual average weekday, Saturday and Sunday.

The patterns which we found in the 1949 survey indicated that about 50% of trans-Hudson vehicular traffic had origins or destinations on Manhattan proper. About 25% were in areas beyond Manhattan but "tied to" Manhattan because the routes between those areas *through* Manhattan were shorter than any alternate routes present or proposed *around* Manhattan. The remaining 25% were in areas beyond Manhattan, to and from which substantial portions would choose new peripheral crossings, if available, in preference to existing Hudson River crossings with terminals on Manhattan Island.

One such peripheral crossing north of Manhattan would be a trans-Hudson facility located close to the New York-New Jersey state line. The other, south of Manhattan, would span the Narrows between Staten Island and Brooklyn, two of the New York City boroughs.

As part of the New York State Thruway, a bridge across the Hudson River is being built as a northerly peripheral trans-Hudson crossing, about five miles north of the New York-New Jersey state line. At this location, the bridge will shift some but not a maximum of the divertible trans-Hudson traffic now traveling through Manhattan by the existing facilities.

The Triborough Bridge and Tunnel Authority has received the necessary Federal approvals for a proposed bridge across the Narrows. However, to date, no action has been anounced on moving forward with this structure.

In October 1952, a limited origin-and-destination survey was made to bring up-to-date the 1949 data and measure the extent of any changes brought about by recently constructed arterial routes, such as the New Jersey Turnpike. The survey data are now being analyzed.

Fig. 3
Weehawken Plaza approach to existing two-tube Lincoln Tunnel, showing New Jersey traffic backup during morning peak hour.

Lincoln Tunnel Third Tube Will Provide Additional Crossing Capacity to Manhattan

In 1950, the Board of Commissioners of the Port Authority directed the Staff to make detailed economic and engineering studies of a possible Third Tube of the Lincoln Tunnel to provide the needed additional interstate vehicular capacity in the midtown Manhattan area. A Third Tube added to the two existing tubes of the Lincoln Tunnel is completely logical from a traffic-handling standpoint. In our original construction of the Lincoln Tunnel in the 1930's, we deliberately designed the Manhattan plaza over-size for the anticipated traffic using the two tubes. Therefore, at present, there is unused capacity at the plaza and this margin of capacity, together with certain additional approaches, will be utilized to give the required approach capacities for the anticipated traffic when the Third Tube is completed. A further advantage is the possibility of using two of the three tubes for the preponderant direction of travel during morning and evening rush hours. Thus, while adding only 50% to the physical facilities of the Lincoln Tunnel, the Third Tube will double the morning and afternoon peak hour capacities when a maximum expansion of capacities is obviously necessary.

At present, the north tube of the Lincoln Tunnel handles New Jersey-bound (westbound) traffic. The present south tube handles New York-bound (eastbound) traffic. The Third Tube is being built to the south of the present south tube, so that when completed, it will be operated New York-bound (eastbound). The present north tube will continue to be operated New Jersey-bound (westbound), while the middle tube (present south tube) will handle the heavy flow of travel New York-bound in the morning and New Jersey-bound in the afternoon. This flexibility will provide four lanes in the peak direction and two in the opposite direction. At other times, the middle tube may be operated with one lane New Jersey-bound and the other New York-bound.

Detailed Traffic Counts Made to Test Ability of Approach Connections to Handle Expanded Three-Tube Traffic

In order to test the ability of the approach connections to absorb and disperse expanded tunnel traffic, comprehensive traffic counts were made in peak periods in August 1950 on the approach streets in the vicinity of the two plazas of the Lincoln Tunnel on both the New York and New Jersey sides of the Hudson River. These counts were made on Monday mornings when the Lincoln Tunnel's New York-

bound traffic is heaviest and on Friday afternoons when its New Jersey-bound traffic is heaviest.

On the New York side, the tunnel's New York-bound traffic was counted on a Monday morning at several points—as it emerged from the tunnel on its Manhattan plaza; as it passed through Dyer Avenue, built in the 1930's by the Port Authority as an eight-block north-south traffic distributor; as the traffic distributed itself to the north and to the south into eight east-west crosstown exits (three eastbound, three westbound, two streets in both directions) between 34th and 42nd Streets; and where it eventually merged with the local Manhattan street traffic to form a combined traffic stream on the local crosstown City streets.

Also in Manhattan, New Jersey-bound tunnel traffic was counted on a Friday afternoon, on the Manhattan plaza as it entered the New Jersey-bound tube; as it approached the entrance plaza via the approach streets; and as it entered the east-west crosstown approach streets from the north-south 10th and 11th Avenues, merged with local city traffic. Thus, these counts demonstrated the manner in which Lincoln Tunnel traffic was distributed on approach streets and the proportion of tunnel and local City street traffic sharing the midtown streets.

On the New Jersey side on a Monday morning, New York-bound autos and trucks were tagged as they entered the various entrance ramps leading into the two-mile-long six-lane expressway cut through Bergen Hill. These tags were removed at the exit ramps as well as on the Lincoln Tunnel plaza before the vehicles arrived at the toll booths.

On a Friday afternoon, New Jersey-bound autos and trucks were tagged at the Lincoln Tunnel toll booths in Weehawken as well as at the various entrance ramps to the cut through Bergen Hill. These tags were then removed at the exit ramps of the expressway.

Thus, from a comparison of the tags distributed to autos and trucks at entrances and those removed at exits, the volumes of Lincoln Tunnel and local New Jersey vehicles which were using stretches of the Bergen Hill expressway were determined on peak morning and afternoon rush hours.

In 1951 and 1952, similar clockings were made to determine any changes in the traffic use of the tunnel approaches as disclosed by the 1950 counts.

Traffic Back-ups Develop Due to Insufficient Tube Capacity

On Friday afternoons in Manhattan, we found that as more and more traffic was delivered by the street system to the New Jersey-bound tube, the rate of delivery became higher than the volume which the tube could absorb. In less than a half hour after the rate of delivery reached the capacity of the tube, long lines formed at the tunnel plaza, flooding all approach streets for many blocks. During the time of maximum back-up in 1950, about 6:00 PM, a total of 1295 vehicles were counted standing on the streets for about ten blocks to the north and south, waiting their turn to enter the New Jersey-bound tunnel.

It is obvious that a substantial part of the congestion in the afternoon rush hour is caused by lack of capacity in the tunnel itself. Consequently, the Third Tube will provide the capacity to move those vehicles off the streets and traffic will no longer be stored on the Manhattan streets around the tunnel.

Similarly, on Monday mornings on the New Jersey side, it was evident that more traffic arrived at the tunnel than it could take away. The result is that traffic backs up on the helix approach and the Bergen Hill cut leading to the tunnel. A Third Tube will also drain off the recurring back-ups in New Jersey.

Third Tube Would Overload Existing Approach Connections

On the other hand, the Monday morning rush hour traffic counts on Manhattan Island revealed that the combined New York-bound tunnel traffic and local City traffic streams using the eight east-west crosstown exits closely approached the capacities of some of the intersections between these east-west exit streets and the north-south 9th and 10th Avenues. It was quite evident, therefore, that if two tubes of the Lincoln Tunnel, instead of the present one tube, were to pour their traffic into the east-west exit streets, they would almost certainly overload most of them. The result would be that traffic would probably back up into one or both of the New York-bound tubes. These traffic figures clearly indicated, therefore, that access to additional streets as well as additional crosstown street exit capacities were essential, if a Third Tube were to be constructed.

Similarly, the counts of New Jersey-bound traffic exiting from the tunnel in New Jersey during the Friday afternoon rush hours indicated that the combined tunnel and local New Jersey traffic streams would overload certain portions of the helix ramp and the approach expressway leading from the tunnel plaza to the arterial state highways and New Jersey Turnpike. Consequently, these traffic figures pointed to the need for enlarging the capacities of certain portions of the New Jersey approach connections in order to absorb the expanded traffic under the proposed three-tube operation.

Manhattan Approach Streets and Plazas Will Be Expanded

When building the Lincoln Tunnel in the 1930's, the Port Authority built, in addition to the present Manhattan exit plaza, a new five-lane north-south distributor roadway, known as Dyer Avenue, running between 34th and 42nd Streets. Dyer Avenue connects with six east-west crosstown streets, expediting the dispersal of New York-bound vehicles by way of four exits to the easterly direction and four to the west on Manhattan Island.

In addition, when building the Port Authority Bus Terminal, located between 8th and 9th Avenues and 40th and 41st Streets in midtown Manhattan, the Port Authority also provided a direct ramp connection between the Lincoln Tunnel plazas and the terminal. The union bus terminal and ramp were opened in December 1950 and immediately removed from local Manhattan crosstown streets some 350 interstate buses which enter the terminal from the Lincoln Tunnel by way of the ramp in the morning rush hour. A 450-car parking area on the roof of the Bus Terminal, which is served by the same ramp connection to the Lincoln Tunnel, has also removed from City streets several hundred autos which previously had used these streets in finding a parking lot.

Eventually, with anticipated growth in terminal usage, we expect that these ramp connections will keep off the nearby streets some 500 interstate buses and about 200 automobiles which will use the Lincoln Tunnel in the peak hour of traffic and which would have had to use local streets if the Bus Terminal and ramp were not available. These ramps will thus result in liberating some 700 units of street capacity, which can be used to absorb part of the 2,000 more New York-bound autos and trucks per hour which will be handled by the Third Tube. This leaves a balance of 1300

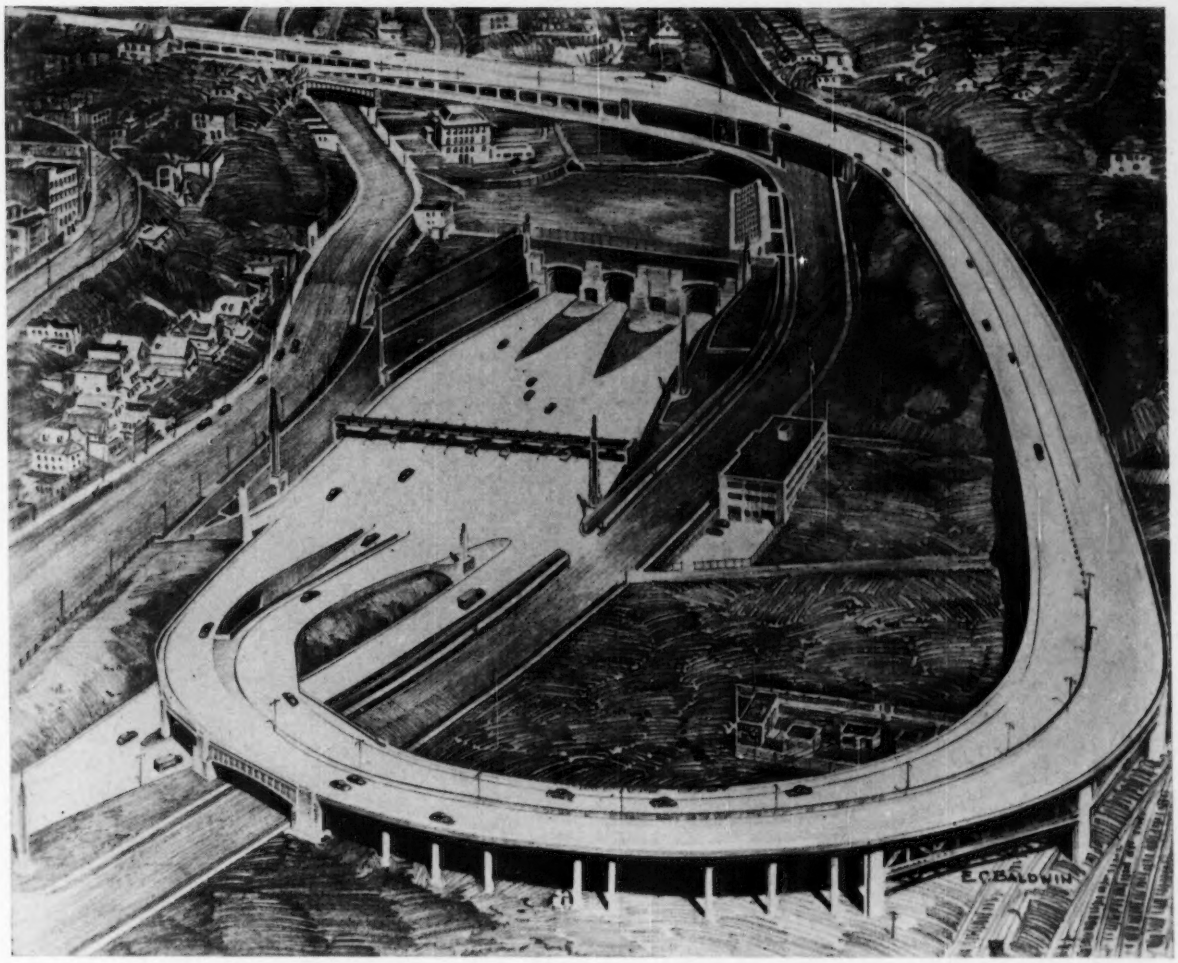


Fig. 4
An artist's drawing of the Weehawken Tunnel Plaza when the new portal (on the right) is completed. The present Administration Building will be re-located and portions of the expressway approach widened, as well as a new underpass provided to Park Avenue, Weehawken.

vehicles an hour to be provided for by new street capacity, in absorbing the anticipated expansion in the morning rush hour.

In order to provide the required additional street capacity, the Port Authority will build an entirely new underpass approach roadway from the exit of the Third Tube at 38th Street, south as far as 30th Street, thus supplementing and extending the present north-south Dyer Avenue. The new approach will have ramp connections with two east-west crosstown streets—33rd and 36th Streets. In addition, three east-west crosstown streets which are expected to carry unusually heavy traffic loads—30th, 36th and 41st Streets—will be widened in order to provide greater access capacities to 9th and 10th Avenues. This will permit tunnel traffic to the north and south to be diffused away from the congested garment and theater districts of midtown Manhattan.

In order to end the controversy with the City of New York, which had delayed the construction of the Third Tube for more than a year and a half, the Port Authority agreed to a compromise under which it will provide certain additional connections, if the City so requests, when the traffic volume at the Lincoln Tunnel reaches 30 million vehicles a year, provided the City acquires and pays for the necessary real estate. These additional approaches include a complete set of ramps to and from the West Side Highway for the interchange of traffic between the West Side Highway and 30th Street, and the widening to a width of 100 feet and paving at grade of 30th Street between 10th and 12th Avenues.

In the event the City of New York goes forward with its proposed 30th Street crosstown expressway, the Lincoln Tunnel connection already will be established. However, regardless of whether the City builds the crosstown expressway, connections will be more than adequate.

We estimate that the cost of the new approaches for the Lincoln Tunnel in Manhattan alone will be about $23,500,000.

Enlarged Lincoln Tunnel Approach Connections in New Jersey

In New Jersey, as part of the Third Tube project, the Port Authority will widen from six lanes to eight lanes the viaduct over the Meadows at the westerly end of the Bergen Hill underpass. The Bergen Hill underpass itself will be adequate for the expanded traffic using the three under-river tubes. A new west-bound lane will be added on the curving ramp for vehicles moving up to the top of Bergen Hill from

(Continued on page 96)

Testing Signs for the New York State Thruway

By Arnold G. Fisch (Assoc. Mem., ITE)
Senior Civil Engineer, New York State Thruway Authority, Albany, N. Y.

THE NEW YORK STATE THRUWAY, now being constructed is the longest of the nation's ever-growing family of limited-access toll highways. It will span the Empire State westward from Albany to Buffalo and beyond to the Pennsylvania border; and from Albany southward to New York City, a total distance of 500 miles. Barring further shortages of steel or unforeseen events, the New York-to-Buffalo route is scheduled for completion late in 1954.

The engineering standards to which the Thruway is being built will provide the motorist with as safe and comfortable a highway as it is economically possible to build: maximum grade, 3%; minimum radius of curvature, 2800′; minimum horizontal and vertical sight distance, 1000′; 25′ and 37′ travel lanes of 9″ reinforced concrete on a minimum 12″ gravel subbase; 10′ gravel shoulder throughout and 20′ minimum center mall (44′ where only four lanes are being constructed initially).

Appointment of Committee

In order to provide maximum service and safety for the Thruway user, the Thruway Authority, by resolution of the Board, authorized its Chairman, B. D. Tallamy (also State Superintendent of Public Works), to appoint a committee of experts from the State Department of Public Works to study and submit recommendations for signs on the new expressway. This committee was under the Chairmanship of Mr. Charles R. Waters (Member, ITE), District Engineer of District No. 5, N.Y.S.D.P.W. The writer served as secretary of the committee and co-ordinator with the Thruway Authority.

The committee was directed to consider the following general subjects:

- Type and size of letters in legend
- Materials of construction
- Type of reflectorization or illumination
- Roadside delineators
- Standards for sign location
- Method of sign erection
- Use of color for signs, trail-blazers and equipment
- Pavement markings

Also considered by the committee were:

- Identification of interchanges
- Illumination of interchanges
- Wording of sign message

Committee Activity

The committee carried on its investigations concurrently by means of four different methods: (1) a review of all the available literature on the various items considered; (2) direct correspondence with officials of other states and agencies; (3) field inspections of signing practices on other facilities; and (4) the conduct of field tests on signs, trail-blazers, and delineators constructed for that special purpose.

Fig. 1
Thruway Sign Committee during Committee Meeting. Front row: Arnold G. Fisch, Senior Civil Engr., N.Y.S. Thruway Authority; Charles R. Waters, District Engr., Dist. No. 5, N.Y.S.D.P.W.; William Robinson, District Engr., Dist. No. 3, N.Y.S.D.P.W.; rear row: Arthur B. Williams, Senior Civil Engr., Dist. No. 10, N.Y.S.D.P.W.; M. Merrell Bailey, Assistant Civil Engr., Dist. No. 6, N.Y.S.D.P.W.; George F. Cox, Assistant Civil Engr., Dist. No. 8, N.Y.S.D.P.W.

Facilities visited included:

- Taconic State Parkway
- New York City expressways
- New York City parkways
- Long Island State parkways
- Triborough Bridge and Tunnel Authority crossings
- Port of New York Authority crossings
- New Jersey Turnpike
- New Jersey State highways
- Delaware Memorial Bridge
- Pennsylvania Turnpike
- Maine Turnpike
- New Hampshire Turnpike

The test signs, trail-blazers and delineators were constructed at the N. Y. S. Department of Public Works sign shop in Hamburg, New York, under the direct supervision of Mr. G. W. Treble (Assoc. Member, ITE). A total of 15 test signs, 8 direction signs, 17 trail-blazers, 4 stop signs and a quantity of delineators of 10 different types were constructed. These were observed by the committee under both day and night conditions. The test signs all carried the same legend, and all had the same size and stroke of letter. The

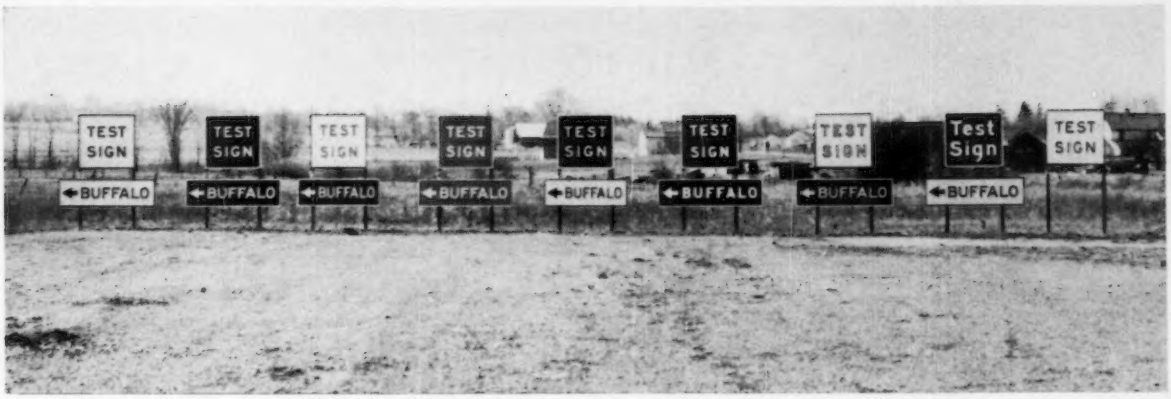


Fig. 2
Test signs at end of runway.

variables tested were color of legend and color of background, reflectorizing material, upper or lower case alphabet, and reflectorization of legend or background, or both. The trail-blazers were tested for color combination, shape, and design of legend. The delineators were tested for color, material, design and mounting height. The stop signs were tested to determine the relative value of a red background versus the standard yellow background.

The various materials used for the faces of the test signs included enamel paint, sheet reflecting material, and paint reflectorized with glass spheres. The legends consisted of plain painted letters, cut-out reflectorized sheeting letters, cut-out molded plastic reflecting letters, painted letters with button reflector units, embossed aluminum letters with button reflector units, and letters made by stenciling transparent paint over reflectorized sheeting. Background colors tested were black, white, dark green, and azure blue. In addition to these background colors for the test signs, both yellow and red were tested for the background of stop signs.

Conduct of Tests

The test signs were erected at the end of a runway at a small local airport, where adequate viewing length could be obtained free of traffic and extraneous lighting. The signs were viewed both on foot in the daytime, and from cars at night to observe the signs under illumination with the cars' headlights only. The large test signs were observed at varying distances from 2000 feet to 50 feet, the trail-blazers, delineators, and stop signs from 400 feet to 50 feet.

Observers were provided with rating sheets on which they scored the distance at which each sign was first readable; their first, second, and third preference in each group of signs; and any other notes. Reflectorized distance-markers were placed every 50 feet along the side of the runway for reference points. Distances between 50 foot markers were estimated.

At the first test, nine of the large test signs were placed alongside each other and viewed simultaneously. It was found that this arrangement placed the outermost signs at a disadvantage with respect to headlight illumination. A second test was conducted in which the fifteen test signs were viewed in three groups of four and one of three. The best signs from each group were then viewed simultaneously to determine the committee's first choice. Similar viewing and scoring procedures were used with the trail-blazers and delineators. In addition to these controlled tests, groups of each type of delineator were viewed under actual driving conditions on sections of the Thruway already open to traffic.

Committee Report

The results of the committee's tests and deliberations are contained in a report which has been presented to the members of the Thruway Authority. The report comprises 31 pages of text supplemented by 8 pages of photographs and 7 pages of maps and detail drawings. A future article will discuss the findings and recommendations of the committee after the Authority has taken official action on the report.

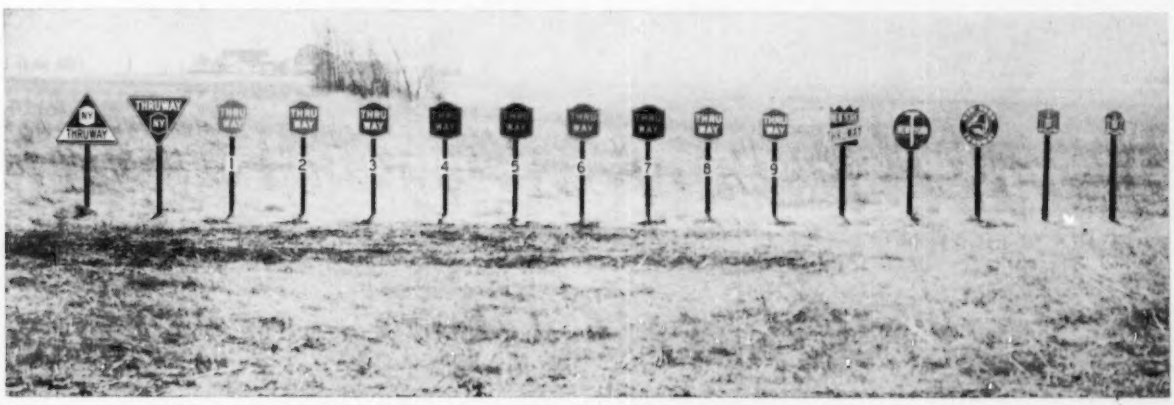


Fig. 3
Trail-blazers at edge of runway.

Traficasting

By C. K. Glaze

Planning Engineer, Washington State Department of Highways, Olympia, Washington

Forecasting traffic is perhaps the most frustrating function a traffic engineer must perform today. Not being allowed the usual factors of safety as in other operations and having to prognosticate for various purposes, the multiplicity of variables involved tend to lead the forecaster into a maze—the easiest solution being to revert to the crystal ball. The inadequacy of records, the confusion of the war years and restrictions on motor vehicle production all add their bit to the jumble from which the forecaster must attempt to draw some conclusions for the proper planning and programming of highway facilities.

Programming necessarily is influenced by finances, which in turn depend on revenue. Revenue in turn is dependent on registration, vehicle miles traveled, motor fuel taxes and fuel consumed. To maintain the inherent conservatism in the engineering profession it is necessary that forecasts of revenue be conservative if sound programming is to be the result. On the other hand, a conservative prediction for design will be one that will amply carry the volume and type of traffic to be served by a specific facility and therefore must be bold. Thus, we are faced with two forecasts. One for revenue, and the other for design but both conservative for their purpose. Actual performance of these forecasts should most certainly be someplace between these two extremes.

The traffic engineer today is continually drawing curves for performance, in population, vehicle registration, vehicle miles, persons per vehicle, and cost index. If historically these curves show a rapid increase he immediately assumes that they cannot continue at the present pace and produces the curve showing a break or lessening affect for whatever factor

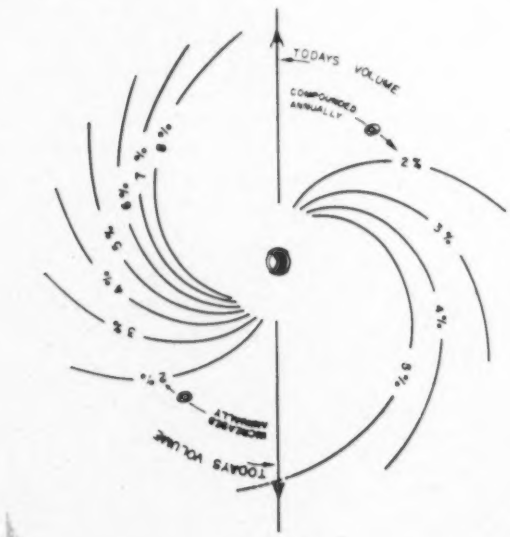


Fig. 1
Transparent rotatable circular slide bearing percentage increase curves; annual increase left side, compounded annual increase right side.

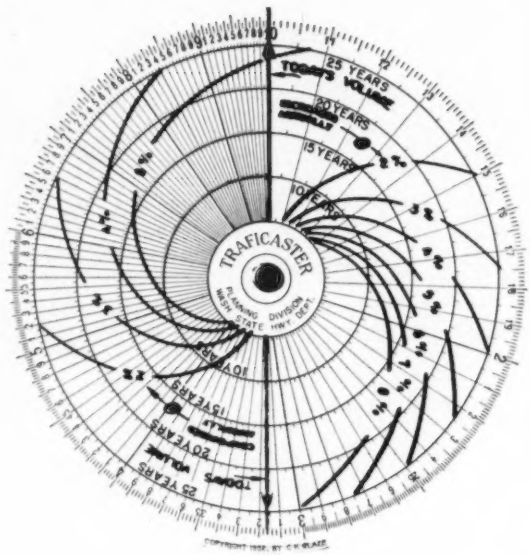


Fig. 2
Complete Traficaster.

he is predicting. This has been proven time and time again, yet the very next year he is all the more convinced that present performance cannot continue. This is most certainly true in the State of Washington and can be proven, for if performance of the last six years continues, some time after the year 2033 we will have more vehicles than persons which is obviously improbable. We, therefore, must arrive at a reasonable saturation point for persons per vehicle, then make several assumptions as to performance, and finally come up with a curve that looks reasonable.

In examining the performance of these variables it is usually found that some increases reflect a compound interest curve, others a simple interest curve. It is probably simple enough to use the mathematical tables, the calculator, and the slide rule to determine these rates of increase, properly factoring them for future increases. This can be done individually, or collectively for the factors on the historical side of the curve, arriving at a satisfactory vehicle mile figure, and forecasts made on the basis of vehicle miles only. The State of Washington ,however, cannot properly be analyzed as a unit. Extreme variations in topography, climate, and economy indicate variations in travel patterns and growth having a wide variance with one another. New large industrial installations and reclamation projects are forever throwing us off balance in the proper prognistication of travel habits. Washington's Highway Planning Division is almost continuously forecasting traffic for 15, 20, and 25 years in advance. Files are filled with graphs and charts of traffic indicators, and the handbooks with mathematical tables always open at the compound interest section. The history of traffic growth in this

(Continued on page 93)

23rd Annual ITE Meeting Paper

No. 4, Presented at the Second Technical Session which was devoted to the subject, Developing the Traffic Plan, September 10, 1952, at 9:00 A.M.

City Planning Aspects of Traffic Engineering

By Ladislas Segoe (Mem., ITE)
Ladislas Segoe & Associates, City Planners and Consulting Engineers, Cincinnati, Ohio

IN TREATING the subject I was requested to discuss in paper, if this is to be kept within reasonable limits of time or space, it is necessary to choose among the numerous and various aspects of the relationships between city planning and traffic engineering. When selecting those aspects which appear to me to be more significant, I recognize that these may not be the same someone else might single out as deserving emphasis. What I decided to do under the circumstances is: first, to attempt to portray in broad outline the objectives, principles and methods of city planning, and, next, to point out and comment briefly on those aspects which in my opinion are most significant from a traffic engineering standpoint—then leave it to the discussors to bring out, in the light of the outline of the city planning process sketched, other phases or relationships they regard as important.

According to Aristotle, who some maintain knew everything and said everything worth knowing and saying, the function of the city is "to make men happy." Perhaps so—. However, happiness seems a rather complicated affair to plan for even to the most self-confident city planner, I daresay, and city planning isn't shooting quite so high.

Stated in broad terms, the fundamental and considerably more modest objectives of contemporary city planning is to make urban communities more satisfactory and more satisfying places:

(a) as the principal workshops of the nation—the centers of industrial production, of distribution and services;
(b) as the predominant dwelling places of our people.

Although implied in the above broad statement of objectives, it may be well to mention specifically the important consideration of national defense—that is, the making our urban concentrations less vulnerable targets of attack, atomic or otherwise, from without or within.

The total job calls for planning and action on at least three levels—national, regional and local:

(1) National policies and programs, to bring about an economically more effective and socially more desirable—aiso militarily less vulnerable and more easily defendable—distribution of economic activities and population;
(2) Concerted and collaborative efforts in metropolitan areas and urban regions, to reshape existing developments and guide all new growth according to an overall pattern of urban units, attuned to and promotive of the same economic, social and national defense objectives as just mentioned; and
(3) Effective local planning within the framework and in concert with planning on national and regional levels directed at—
    (a) recognizing and redeveloping the present city to cure or ameliorate its many shortcomings and to bring it abreast with contemporary technological and social standards, and
    (b) controlling new growth within predetermined limits or urban expansion, as set by the overall regional plan and in accordance with soundly conceived local plans.

In brief, then, a program of building better cities and urban areas would embrace three major phases:

(1) The reorganization and redevelopment over the years of metropolitan areas and urban regions into clusters of communities, each community of predetermined size and separated from the others, and each designed for its particular function in the metropolitan region;
(2) Expansion of the existing small towns into cities of moderate size—again separate from other cities; and
(3) Building of new cities of moderate size, both as satellites within the orbits of large urban centers and as self-contained communities in presently rural areas.

As was intimated earlier the modern city has two greatly different basic functions. It is most important that this be recognized in planning for the sound future development of our cities. As workshops they must be made more efficient, in order to eliminate waste of time, effort, money, etc.—including that due to traffic congestion and delays. As places for the living they must be made more healthful, safe, pleasant and in general more satisfying, with decent housing for all families, more open spaces and better community facilities, and with less noise, smoke and hazards, less strain and stress—including those caused by traffic difficulties.

We must recognize, further, that there are inherent conflicts between the city as a production machine and the city as a place for living. It has become quite clear, in fact, that non-recognition of these conflicts and our failure, as a consequence, to obviate or minimize them in building our cities, is one of the major causes of some of the most serious shortcomings and problems with which our cities are now confronted.

In planning for the redevelopment of existing cities and their expansion, and in the planning of new cities as well, we are now trying to prevent or to minimize these conflicts and to pursue the basic objectives mentioned earlier by:

(1) separating the urban production machine from the residential or living areas and by cushioning one against the other, and
(2) reorganizing the industrial and commercial parts and other areas and facilities having to do with production and distribution of goods or services—for greater efficiency; and the residential parts of the city—for more satisfactory living.

The structural reorganization of the urban land use pattern along these lines calls for assembling the parts of the urban production apparatus into well defined corridors or areas containing, besides manufacturing industries, heavy commercial and warehousing uses, railroad and other transportation facilities including trunk line motorways; and the buffering of these areas and activities against adjacent residential sections by topography, major open spaces, expressways and other "neutral" uses. At the same time residential parts of the city are to be organized into subcommunities and the latter into neighborhood units—each reasonably self-contained as regards the necessary educational, recreational, social and shopping facilities and services, and separated from one another by well defined natural or man-made features.

It is hoped to achieve many improvements in urban living by thus reorganizing the amorphous mass of our large cities into communities and neighborhoods and by shaping and reshaping its land use pattern along functional lines as just indicated, among these:

(1) lessening of mental and physical strains and the sense of "not belonging," by re-introducing some of the conditions characteristic of the small and medium-size cities;
(2) preventing premature obsolescence, blight and slums, and the economic and social wastes to which these give rise;
(3) facilitating and increasing the efficiency of economic activities, industrial, commercial, etc.;
(4) combatting ever-increasing traffic congestion—not by providing more and more facilities and regulatory devices for handling traffic—which seems an endless and hopeless task—but by minimizing the need for transportation.

It is hoped to accomplish this by bringing about over the years a functionally better organized and otherwise more rational land use pattern. More specifically, by better relationships between places of residence and places of work; better articulated and balanced distribution of industrial and commercial activities; better located transportation terminals and other major traffic generators.

Planning for and accomplishing over the years the redevelopment and expansion of our cities or urban areas along these lines, with the view of attaining or even approximating the stated and other objectives of sound community planning, call for collaboration of technicians from quite a number of diverse fields—economists, sociologists, political scientists, architects, highway engineers, sanitary engineers, and, needless to say, city planners and traffic engineers. Traffic engineering and city planning, with which this paper is concerned, plus highway engineering techniques must be applied in various combinations in many phases of the planning program.

The solution of a major traffic problem, the plan of the major trafficway or the overall major street net for a city or urban area to be sound, must take into account and meet the desiderata from the point of view of all three of these disciplines. The plan finally chosen from among possible alternatives must be that found on balance to be the most desirable. On most any such job collaboration between the city planner, highway engineer and traffic engineer is essential for fully satisfactory results. At any rate, each of these should understand and recognize in his work the principles and considerations applying from the point of view of the other two disciplines. Some of the more important city planning principles and considerations in designing a system of urban expressways, may serve as a good illustration. Basically, these have to do with appropriate adjustments to existing land uses and activities, and the furtherance of the desirable future land use pattern and general development of the community.

(1) From the standpoint of existing developments the expressways should be so located and designed that these—
  (a) should benefit and not affect adversely adjacent land uses;
  (b) should help conserve sound existing developments and arrest or prevent the further decline of sections subject to or threatened by the deleterous effects of heavy traffic;
  (c) should permit more effective and efficient use of functionally related facilities—terminals of various transport instrumentalities, for example;
  (d) should not create additional barriers;
  (e) should help to buffer residential sections against adjoining industrial or commercial areas;
  (f) should involve the minimum destruction of residual building values in securing needed right of ways.
(2) From the standpoint of the future development of the urban area, the expressway routes should be so chosen that they—
  (a) should help to improve the prevailing land use pattern, and to further residential, business and industrial expansion in appropriate locations;
  (b) should stimulate developments in otherwise desirable parts of the city or urban area which are now retarded due to inadequate accessibility or good connections with other parts;
  (c) should afford opportunity for rapid transit service.

When we stop to think of it, it seems quite evident that much of the traffic in our cities, and not alone street traffic—the shuttling, shifting and shunting of goods and people between various sections and facilities in the city is nothing but waste—sheer waste of time, money, energy and effort, to say nothing of the toll this unnecessary traffic takes of life, physical and mental health, manners, etc., etc.

Ever-mounting traffic loads and the inadequacy of city streets are not the basic causes of our traffic difficulties, in my opinion. These are to be found in the haphazard and otherwise defective way in which we have located activities and land uses in our cities. Unless we manage to re-arrange these land uses and activities, with the view of minimizing the need for moving people and goods about within the city and urban area, we shall be fighting a losing battle, I fear—"the city will increasingly be in the way of traffic."

In conclusion a brief statement of what seems to me important for the traffic engineers to remember as regards city planning:

(1) that traffic—the moving of people and goods from place to place within the city or urban area—is not an objective in itself; merely one of the services or facilities essential in the modern city (water, sewers, power, are others);

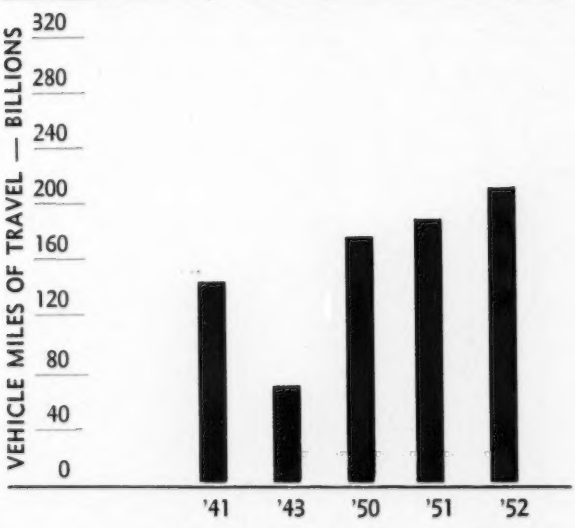
(2) that much of this traffic is waste of money, time and energy, and therefore the less we can get by with the better: the best designed city from the traffic standpoint being that requiring the minimum of traffic movement for its satisfactory functioning.

(3) that heavy traffic volumes are objectionable in several respects and not alone to adjoining residential properties and, therefore, every effort should be made to provide for such traffic along such routes and in such manner that this will be insulated, unobtrusive and cause the least possible interference with other activities in the city;

(4) that the end purpose of every traffic betterment or solution is to improve the conditions of living and making a living in the city. The solution of one traffic problem at the expense of aggravating another or creating a new one is not acceptable—even though the other may not be a traffic problem. The health of the patient is more important than the cure of the ailment. The over-riding criterion of the soundness of a corrective plan and action is not the success of the operation but the improvement in the health of the patient.

(5) that the traffic engineer can best help in building better cities and contribute most, in the long run, to the accommodation of traffic as well, by seeing to it that his work not only helps to move traffic efficiently, expeditiously and with safety, but that this be accomplished in harmony with the city's present and desirable future development—nay, so as to foster and contribute to the attainment of such development.

Traffic Trends



TRAVEL ON RURAL ROADS FOR FIRST NINE MONTHS OF 1941, 1943, 1950, 1951 and 1952

Based on Bureau of Public Roads Data

TRAFICASTING

(Continued from page 90)

state has been on a compound interest basis since World War II. We, therefore, platted the compound interest tables, comparing charts and graphs, but generally reverting to the interest tables for a new rate for one factor or another. All of this, then, leads to the development of the Traficaster which is shown in the illustration.

This gadget is a logarithmic circular slide rule having both radial and annular lines with a transparent revolving disc slide having curves for both compound and simple interest increases at the more nominal rates. It was originally published with only the compound interest curves and affixed to a card having tabulations of pertinent data for the 9 permanent recorders on the State Highway System then having been in operation continuously since World War II. This tabulation showed the recorder numbers, location, the 1951 ADT, truck percentages for both single units and combinations, the average compounded yearly increase in percent, and the 30th, 40th, and 50th peak hour data in percent. This enabled the District Traffic and Design Engineers to save a considerable amount of time in calculating and forecasting future traffic. In this form it attracted quite a degree of interest in highway circles in this section of the country. In order that it could pertain to other locations or states whose traffic growth was indicated to be on a simple interest basis, a new model was produced and copyrighted, having both sets of curves as indicated by the illustration. Numerous suggestions and criticisms have been made; others have indicated that it is perfectly satisfactory in its present form. The original model was not designed as a precision instrument, and for the purpose of forecasting traffic with the multiplicity of variables hereinabove mentioned, it is probably more accurate than the basic assumptions with which it is used, and the results adequate for design or revenue purposes. Comments from engineers and financial houses having to do with amortization have requested that it be more highly refined for approximating interest and depletion for amortization purposes. It is now in the process of such refinement.

In its present form it may be used to indicate interest for various periods, setting the index of "Today's Volume" on the principal, the total principal plus interest will be indicated at the desired percentage for the desired period, the interest then representing the difference between the principal and the total.

It is hoped to place the manufacture and distribution in the hands of a nationally known organization having contacts with the traffic engineering profession, and it is anticipated that an announcement of its availability will be made in the near future.

MEMBERSHIP INFORMATION

may be obtained by writing to:

Executive Secretary
Institute of Traffic Engineers
Strathcona Hall
New Haven 11, Connecticut

By Charles R. Waters (Mem., ITE)
District Engineer, N. Y. State Department of Public Works, Buffalo, N. Y.

New York State Truck Weighing Stations

Under a new policy the State of New York has completed and placed in operation, several Truck Weighing Stations which are to be used in connection with the enforcement of the 1951 Highway Use Tax Law. This law states that a motor vehicle, of a maximum gross weight in excess of 18,000 pounds, must have a permit and plate before operating on the public highways of this State. Truck operators are required to pay a monthly tax based on this maximum gross weight as well as the total miles driven. The tax is imposed for the privilege of using the public highways of the State, and is designed to distribute more equitably the burden of the cost of highway construction, maintenance and policing. The statute exempts from the tax motor vehicles which operate exclusively within limits of commercial zones which had been established by the Public Service Commission at the time of the enactment.

Fig. 1
View of Truck Weighing Station. Note scale house on each side of highway.

It is the function of these weighing stations to check weights of truck loads and to detect violations of the Tax Law. Only trucks in excess of 18,000 pounds are required to enter the stations, however, State Troopers in attendance do have the jurisdiction to request any truck to be weighed.

Nine of the stations are currently in use while eleven others are nearing completion and are expected to be open in the very near future. Situated well off the highway the stations have a scale capacity of 100,000 pounds. An automatic printing device records the weight of the vehicle as soon as it comes to a halt on the scales. Turnout drives parallel to the highway approximately 800 feet in length with level grades and ample sight distance lead the truck to the scales and back into the roadway. The scale house of frame construction is located about 500 feet from the entrance. Only vehicles in the lane adjacent to the station are weighed, thus eliminating the danger of crossing traffic.

Experience gained from the Stations already in operation indicate that weighing time is approximately one and one-half minutes. This factor coupled with the safe and efficient operation of the weight stations is vitally important to the trucking industry as well as the State of New York.

Fig. 2
Platform and house. Axles are not individually weighed.

EDITOR'S NOTE: *It will noted from the accompanying photographs that the New York design, contrary to usual practice, locates the scale pit on the outside of the rights of way, with the house position being in the island adjacent to the travel lanes. Separate scales are provided for each direction of travel.*

The construction and operation of truck weighing stations is a subject of concern to many states at present and TRAFFIC ENGINEERING invites articles on design and operation experience from the highway engineers of those states.

Boston SCE Resolution Censures Competitive Engineering Bids

WHEREAS, The Boston Society of Civil Engineers through its Board of Government authorized the appointment of a "Committee on Professional Practice as Relating to Competitive Bidding," which Committee recommended that a resolution be referred to the membership of the Society, and

WHEREAS, engineering services as customarily rendered to clients by practicing engineers are of a professional nature; and

WHEREAS, such services cannot be definitely specified; and

WHEREAS, The Code of Ethics of the Society states "Aggressive Competition which often prevails in ordinary commercial transactions cannot exist among engineers without diminishing their usefulness and lowering the dignity and standing of the profession", and

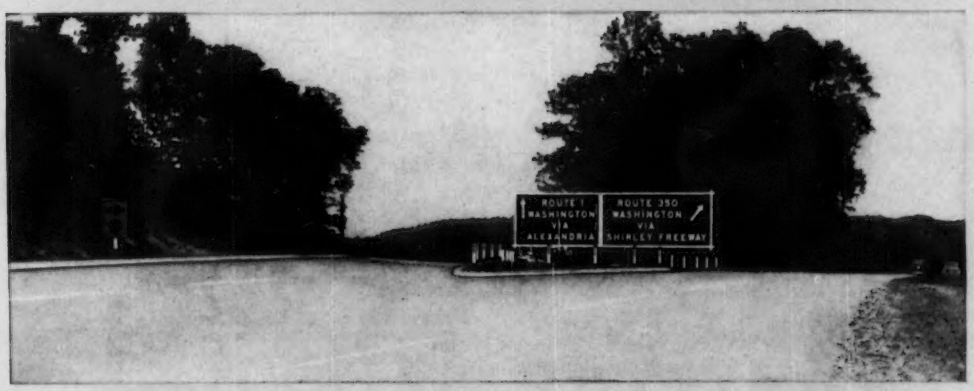
WHEREAS, a report on "Recommended Procedure for Securing Professional Services by Public Authorities, 'endorsed by vote of the Society on November 9, 1949, states' . . . . it is contrary to the best public interests to procure professional engineering services on the basis of competitive prices . . . ."

Therefore be it

RESOLVED: That it is unethical for an engineer knowingly to compete for services to clients on the basis of price. (October 15, 1952)

TYPICAL INSTALLATIONS WITH A'G'A CUTOUT LETTERS NUMERALS AND ARROWS

INFORMATION ON REQUEST



INFORMATION ON REQUEST

A'G'A® DIVISION OF ELASTIC STOP NUT CORPORATION OF AMERICA
1027 NEWARK AVENUE • ELIZABETH 3 • NEW JERSEY

LINCOLN TUNNEL THIRD TUBE TO EXPAND TRANS-HUDSON VEHICULAR CAPACITY

(Continued from page 87)

the Weehawken plaza. The New Jersey plaza itself will be widened and five more toll booths will be added to the present thirteen. A new underpass will also be constructed in Weehawken between the plaza and local City streets. These improved connections and widened plaza in New Jersey will cost an estimated $11,500,000.

The Township of Weehawken is studying the Port Authority plans for street connections in that municipality. At the request of the officials of Weehawken, the consulting engineering firm of DeLeuw & Brill has been retained, at Port Authority expense, to study the adequacy of the plans for handling traffic on the New Jersey tunnel approaches. The study should be completed by January 1953.

Third Tube and New Approaches Will Cost $90,000,000

The estimated cost of the entire Third Tube project, including construction, real estate and interest during construction is $90,000,000. Approximately 40% of the cost of the project will be devoted to new connections, extensions and expansions of the plazas. This traffic planning will assure that the peak hour traffic of the three-tube Lincoln Tunnel will be efficiently absorbed and diffused by the approach system of streets and connections, both in New Jersey and on Manhattan.

Plans for a Fourth Hudson River Crossing

With the continuing growth in vehicular traffic between northern New Jersey and New York City, the Port Authority recognizes the need for still more trans-Hudson vehicular capacity. At the Third Tube ground-breaking ceremonies on September 25th, Chairman Howard S. Cullman announced that the Port Authority, for more than a year, had been working on plans for another two-tube crossing of the Hudson River to be located somewhere between the Holland Tunnel and the Lincoln Tunnel. He stated that it appeared that this Fourth Port Authority Hudson Crossing would cost upward of $200 million.

Chairman Cullman further pointed out that the general pooling of revenues from all Port Authority terminal and transportation facilities, as well as prudent management, had assured a credit that enabled us to borrow money to provide these new vehicular crossings, as well as the improvements of our other marine, inland and air terminals, without recourse to the pocketbook of the general taxpayer. This good credit also is responsible for the fact that we do not plan to increase the tolls for the use of the Third Tube or the Fourth Hudson River Crossing, although it is self-evident that standing alone, they could not earn the cost of their construction and operation without a considerable increase in tolls.

ITE Members Aid in Third Tube Project

On the Port Authority staff, members of the ITE, Nathan Cherniack and Edward G. Wetzel of the Port Development Department and Louis E. Bender of the Operations Department, participated in the studies and plans for the Third Tube, as well as the necessary liaison and discussions with outside traffic and highway agencies. With the start of work during the summer, Roger H. Gilman of the Port Development Department was designated as Project Coordinator of the Third Tube.

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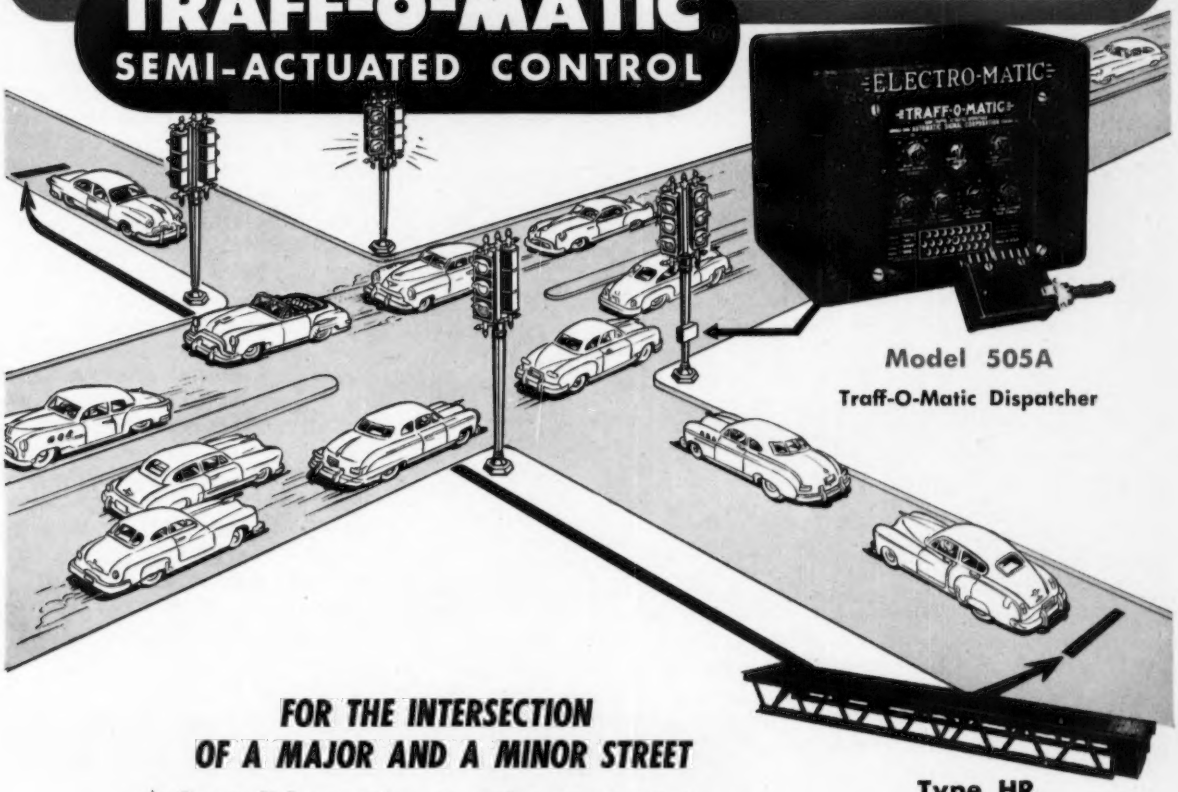

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TRAFFIC NEWS

Mechanical Parking Lot Built in Portland

Fig. 1
Entrance of Mechanical Parking Lot.

A young ex-G.I. in the Pacific Northwest has come up with one possible solution to a big city's number 1 headache . . . the problem of providing adequate parking space in the heavily congested downtown area.

The veteran, Leo Sanders of Northport, Washington, formerly operated a filling station, garage and restaurant business in that remote Washington town. But he went to the cities . . . and he knew what the parking problem could be. He visualized a structure that could be erected on a parking lot to store a number of cars above the ground level, and a mechanical means of placing autos in this storage structure without using costly space for ramps and aisleways.

Enlisting the aid of his brother, Vaughn Sanders, he formed an organization and authorized Peters and Company to design and build what is now known as the "Pigeon Hole Parking System", using the fast, efficient teamwork of hydraulic and electric equipment. The problem was to erect a structure on a parking lot that could store a number of cars above ground level, and provide a mechanical means of placing them there.

The storage structure needed to be light, of bolted construction so that it could be economically erected on property to which a relatively short term lease might apply, yet strong enough to support as many as six cars in height and take weight loads. It also had to withstand conditions of snow, ice and high wind velocity. The structure developed was steel, bolted together and completely functional in design.

The hoist, or parking machine, had to travel rapidly and carefully to move autos from entrance areas to storage spaces. It moved both laterally and vertically in order to deposit a car into the selected space. A combination lift and carrier was the result. This machine has a hydraulic lift cylinder mounted on wheels which run on a track. The lateral motion is powered by a hydraulic variable speed reversible drive.

In operation, motorists park their cars much as they would file a letter or check

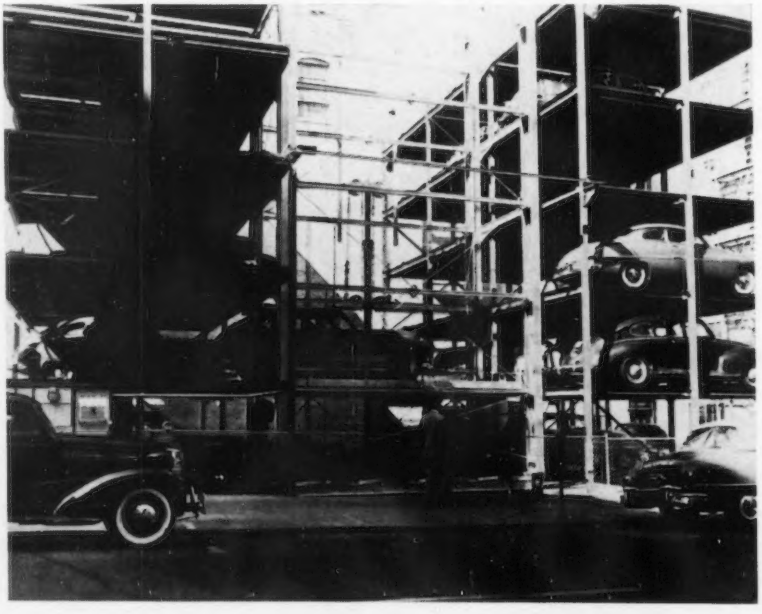

Fig. 2
View of the Pigeon Hole Parking Lot in Portland, Oregon which provides parking for 58 cars in a space normally used by 16.

a hat. The auto is driven into the ground-floor stall from which it is placed on a parking machine by means of an electrical transfer carriage. The "parker" then rolls down the central corridor on rails, lifting the car to the proper level where it is deposited in the selected pigeon hole. Motorists merely drive up and "check" their cars. Each car is automatically lifted and lowered by an elevator which moves sideways as well as up and down.

The Pigeon Hole Parking System, which will soon be introduced in Los Angeles and Texas, accommodates 58 automobiles in an area which would normally furnish space for 16. One-third the usual amount of labor and time is expended in parking each car and the system completely eliminates the possibility of damage resulting from the "car-chess" employed by the usual parking lot.

Electric switches and controls power the operation and shuttle the car into or out of its "pigeon hole", filing it and returning it to its owner. Special electrical dollies make it possible for the motorist to lock his car and set the brakes, and since cars are not driven by an attendant they can be parked closely together without being scratched, dented or damaged. A 40 h.p. motor powers the hydraulic pumps used for lifting and traveling.

Because no switch gear could be placed within the structure due to elevator and car clearances, engineers of the manufacturers of the electrical equipment used throughout the fast-moving operation, provided an outside service center which is a lockable unit housing all control switches and breakers. Through this center the entire operation of parking and locating cars is operated as simply as a telephone switchboard.

Some of the problems encountered were the transmission of power to the movable hoist in outside locations exposed to the weather, and the remote starting of electrical motors receiving power from downtown grid systems where starting currents must be limited. All wiring and fitting on Pigeon Hole Parking Lots had to be weatherproofed and capable of meeting requirements from the 30° below zero of Madison, Wisconsin, to the 120° above of Caracas, Venezuela . . . from the ice and snow of Spokane to the 30″ annual rainfall of coastal cities.

Pigeon Hole officials estimate that the cost of construction, even with the special equipment needed to operate one of these parking lots, runs about one-half the cost of building a standard garage. That, plus the economy of space and manpower, and the tremendous saving of time, accounts in large measure for the wide national interest in this new Western development's first unit built at Portland, Oregon.

Speeding Drivers Cancel Safety Work of Highway Engineers

A warning that increased severity of "super-accidents" will boost the nation's annual traffic toll "beyond belief" in the next decade if drivers are "encouraged to speed on bigger and better roads on the theory that engineering alone will produce safety" has been sounded by Thomas N. Boate, accident prevention department manager of the Association of Casualty and Safety Companies.

Speaking before the 14th annual safety meeting of utility companies affiliated with Ebasco Services, Inc., at Chicago on October 22, Mr. Boate declared the present dream of a nation-wide network of super-highways will become "a nightmare of death and devastation" in multiple-death accidents unless reckless drivers are curbed by rigid enforcement of more reasonable speed limits on these superbly engineered roads, as well as all other highways.

He attacked as "safety heresy" a recent statement by the head of a national highway safety organization which Mr. Boate said "practically put a blessing on speed so long as the highway was 'properly engineered'." The statement in question, Mr. Boate pointed out, stresses dangers that are virtually eliminated by super-highways, such as head-on collisions, intersection crashes and pedestrian accidents, but minimized "the far greater danger" of disastrous mishaps resulting from too much speed.

According to Mr. Boate, "the paramount human factor present in the vast majority of accidents was virtually ruled out" in the statement he criticized. He said it advanced the idea that roads encouraging speed are "overwhelmingly likely to be safer," simply because they are modernly engineered. Speed should be discouraged everywhere, he asserted, rather than encouragd by safety authorities in their efforts to obtain safer highways, "because speed is still the No. 1 killer in accidents."

"Drivers should not be encouraged to speed on bigger and better roads for the very obvious reason that faults in the man behind the wheel can never be corrected by any amount of highway engineering," said Mr. Boate. "Motorists are driving to almost certain death, even in broad daylight, the instant something goes wrong at 60 or 70 miles an hour, or more, on these perfect roads. Few drivers survive the experience of braking their vehicles in an emergency at 70 miles an hour.

"I want to make it perfectly clear that I am speaking for, not against, super-highways. It must be perfectly obvious to most people, however, that the safety objective for which super-highways are built has been virtually eliminated by the excessive speeds at which cars are operated on them. The records of the Pennsylvania and New Jersey turnpikes testify to this truth.

"Engineering has contributed a great deal to highway safety, but any statement that places the destiny of speeding drivers entirely in the hands of super-highway engineers is plain safety heresy. It is heresy, I am sure, to all authorities who recognize the simple unmistakable truth that speed kills when it gets out of control. That can happen on any super-highway built for maximum safety, or it can happen on an outmoded highway where speed is undebatably deadly.

"In nine out of ten cases it is the driver who causes an accident. The driver who continuously speeds is only hastening the day of reckoning. All of the super-highway engineers in the world won't be able to save him if he goes too fast too often and suddenly faces an emergency he can't handle because of excessive speed.

"The dream of a network of miracle roads, stretching from coast to coast and up and down the land by 1962, will become a nightmare of death and devastation as the severity of accidents increases on this growing chain of super-highways, unless steps are taken now to enact and enforce sensible speed limits that will keep drivers from killing themselves and others in super-accidents."

Mr. Boate warned that an increasing number of disastrous "chain-reaction" accidents will result from "permitting or encouraging too much speed" on present or future highways. The danger of these "super-accidents" is increased when unfavorable road conditions prevail, he said, because drivers following a vehicle which becomes involved in an accident are going too fast to stop in time. Under perfect con-

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ditions," he pointed out, "a vehicle can be braked to a safe stop within 264 feet from a 60-mile speed, or 297 feet from a 70-mile pace, on the average, but these safe spacing distances are seldom observed or enforced on super-highways."

The speaker cited as examples of "chain-reaction" mishaps one accident involving five large trucks on the Pennsylvania Turnpike which caused two deaths and property damage and liability claims totaling $700,000, and the pile-up of 11 vehicles during a fog on the New Jersey Turnpike near Elizabeth, in which eight persons were injured.

(An accident involving 16 vehicles, killing 2, critically injuring 8, and hospitalizing a total of 26 persons, occurred on the New Jersey Turnpike during a dense fog on the night of November 15-16, 1952. Initial cause of this accident was a truck crashing into the rear of a slower moving truck, killing the drivers. Fourteen following vehicles piled into the wreckage. Many other accidents occurred, the fog being so dense that ambulances, investigating officers and wrecking trucks had extreme difficulty in locating and cleaning up the crashes, although mobile radio equipment was fully utilized. Conditions became so bad that the Authority closed the 35 mile section from New Brunswick to the northern end to all traffic from 1 A.M. to 7 A.M. November 16. Ed. Note.)

The $700,000 super-accident on the Pennsylvania Turnpike happened when one large tractor-trailer jacknifed on a slippery stretch of road near a tunnel as the driver applied his brakes. One by one, four trucks following it ploughed into the wreckage, their drivers unable to stop in time because they were traveling too fast and following too close, Mr. Boate said. Two of the drivers were killed, damage to the trucks and cargoes totaled $73,200 and liability claims filed later totaled $625,000.

The recent "chain-reaction" mishap near Elizabeth occurred simply because one driver obeyed the law and slowed down as he entered a fog bank, the speaker added. Eight other cars and two trucks piled up in this "super-accident," he said, despite the fact that the New Jersey Turnpike has a legal speed limit of 35 miles an hour under fog conditions. The fact that 10 out of 11 drivers did not obey the law and lacked the ability to control their vehicles eloquently testifies, he declared, to the fact that most motorists cannot be trusted to drop from high speeds to lower speeds at the proper time.

A total of 363 persons have lost their lives in accidents on the Pennsylvania Turnpike since October, 1940, Mr. Boate declared, and 40 were killed on the New Jersey Turnpike during its first ten months of operation. With the advent of an extended chain of super-highways, he warned, "the death toll and the severity of accidents on such roads will boost the nation's traffic toll beyond belief unless high speeds and reckless driving are forbidden and vigorously curbed on these as well as other highways."

Mr. Boate, a former Pennsylvania State Police captain in charge of its traffic division, said the death toll on the Pennsylvania Turnpike during the last decade might have been considerably less if lower speed limits had been in effect and enforced. Even its present limits of 70 miles an hour for passenger cars and 50 miles for trucks "are neither well observed nor well enforced," Mr. Boate charged, because the police force is not adequate to do the job. He added that last month one of his staff members had traveled the entire Pennsylvania Turnpike both ways, a total of 654 miles, without seeing a patrol car. A 45,000-pound truck traveling at 73 miles an hour was clocked by another observer on the Pennsylvania Turnpike near Blue Mountain, he said. "If 22½ tons traveling 73 miles an hour gets out of control suddenly, could a super-highway engineer save the driver, the truck, the cargo or any other vehicle that it might hit?" Mr. Boate asked.

More than 3,800 persons have been injured in more than 5,300 accidents on the Pennsylvania super-highway since it was opened, he declared. In that time the cost of actual property damage, excluding liability claims resulting from accidents, has come close to $5,500,000, while the average cost of property damage per accident has risen from $221 in 1940 to $1,302 in 1950. Damage averaged $1,600 per accident in the first seven months of 1950, compared with less than $500 on two and three-lane highways, he added. In the first eight months of this year, property damage in 40 fatal collisions averaged $2,429.52 per vehicle. Excessive speed caused 24 of these fatal smashups and 50 injuries, or 60 per cent, Mr. Boate said.

An independent radar speed check of more than 400 commercial vehicles on the Pennsylvania Turnpike showed more than half of the trucks were traveling above the legal speed limit of 50 miles for trucks, according to Mr. Boate. He emphasized that truck operators generally believe that the majority of accidents which result in death and high property damage are due to speeds above the driver's capacity to control his vehicle properly.

Mr. Boate declared that one study had shown the Pennsylvania Turnpike's fatality record is twice that of the highway record of Pennsylvania and that its property damage per accident is five times greater than the estimated national average. This study, he pointed out, asserted that the turnpike's accident problem is one of severity rather than frequency. According to the speaker, the Pennsylvania Turnpike Commission has "resisted" efforts of its safety committee to reduce its top speeds for cars and trucks and to increase enforcement of the speed laws with more manpower.

Mr. Boate declared the New Jersey Turnpike Authority already has recognized that speed is a deadly factor in accidents. Of 850 drivers who received summonses on that turnpike, where the speed limit is still 60 miles an hour, during an eight-week period ended September 7, he pointed out, 540 were ticketed for speeding, or more than 60 per cent. Its administrators have learned, he added, that the main causes of its accidents are traveling too fast for conditions, exceeding the speed limit, and following too close at high speed when emergency stops are required.

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For Traffic Control Department

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Address: Recruitment and Examinations, Civil Service Board, 412 Municipal Building, Dallas, Texas.

New Product Appearance Research Laboratory Established

Richard S. Hunter, formerly Chief Optical Engineer with the Henry A. Gardner Laboratory of Bethesda, Md., announces the formation of a new development, testing and consulting group devoted exclusively to appearance and related optical properties of materials. By appearance properties are meant color, diffuse reflectance, gloss or luster, turbidity, haze, opacity and the like.

This new laboratory, the first of its kind, will be called the Hunter Associates Laboratory and will be located at 5421 Brier Ridge Road, Falls Church, Va. Mr. Hunter, who is designer of the reflectometer, color-difference meter, and the several glossmeters and other instruments which bear his name, will have as his associates Mr. Marshall Powell, an electronic engineer formerly with the Gardner Laboratory, and Mr. James D. Ferguson, Jr., a mechanical engineer, formerly with Aviation Corporation.

A small optical laboratory is being equipped at the above address in suburban Washington, D. C. By January 1, research and manufacturing organizations concerned with product appearance will be offered the following types of services:

1. Advice on appearance instrumentation and preparation of specifications (no charge for suggestions or estimates).
2. Tests of materials for regular and special appearance properties, including calibrations of standards and referee tests.
3. Designs of improved appearance-testing instruments (It is not planned to manufacture instruments, therefore suitable designs will be licensed for manufacture by others).
4. Development of procedures (including equipment where necessary) for testing, inspecting, and in some cases automatically controlling the appearance quality of manufactured and processed materials.

Information about the facilities of the new laboratory and its test and development work may be had by writing Mr. Hunter.

———o———

The Department of Agriculture reports that 98 per cent of all agricultural products now move all or part of the way from farm to market by motor vehicle.

More 23rd Annual Meeting Pictures

The October issue carried seven cuts picturing some of the Chicago Annual Meeting activities. The Institute's "official" photographer, Henry A. Barnes, City Traffic Engineer, Denver, Colorado, who took all the photographs, has furnished these additions:

[1] Professor C. C. Wiley, Mrs. Wiley (left), Mrs. Robert W. Harris and Mrs. Richard A. Walons smile approval as they watch Headquarters room activities.

[2] George Howie, Fred Fowler, Holden LeRoy and Lynn Stewart (left to right) get together at Technical Session.

[3] Robert H. Nau, Evan E. Olmstead and Mrs. Nau indulge in some "swing your partner" in Headquarters room. Harry Porter extreme right.

More 23rd Annual Meeting Pictures

[4] Mrs. Ralph F. Michel (center) charming Chairman of the Ladies Activities Committee, with (left to right) Mrs. Ralph F. Gross (Chicago), Mrs. John Ecker (Columbus, Ohio), Mrs. Michael Cavanaugh (Chicago), and Mrs. Clyde M. Condrey (Cincinnati, Ohio) enjoy reception festivities. (Doesn't the reader agree that the ITE Filly's Auxiliary includes an undue number of likely candidates for beauty contest honors?)

[5] At opening luncheon President Cherniack (left) chats with Mr. Ralph A. Budd, Chairman of the Chicago Transit Authority, while Chicago City Chief of Traffic Police Michael Ahern discusses mutual problem with Chief George A. Otlewis (right) of the Chicago Park District Police.

[6] Mrs. John Sorenson, Mrs. Ralph F. Gross and Mrs. Leslie J. Sorenson (left to right) smile for photographer during reception preceding annual banquet.

[7] President F. Bruce Crandall, Immediate Past President Nathan Cherniack, and Vice-President Harry Porter, Jr., pictured at annual banquet speakers table, laugh heartily at toastmaster's humor.

Cooperative Efforts Needed for Highways

Development of an efficient highway network is a joint responsibility requiring cooperative effort of state, city and county, it is emphasized in a recent report on a study of intergovernmental relationships in highway affairs in the State of Maryland.

The study was a pioneering step in a research project cooperatively sponsored by interested national organizations of public officials and others, and conducted under auspices of the Highway Research Board. Objective of the over-all project is to obtain a set of guiding principles to bring about close working relationships in highway matters.

$575 Million in Federal-Aid Road Funds for Year

Apportionment of the $575 million authorized as Federal-aid to the states for highway construction in the fiscal year beginning July 1, 1953, has been announced by Secretary of Commerce Charles Sawyer. The funds were authorized by the Federal-aid Highway Act approved June 25, 1952.

The Act provides $247,500,000 for projects on the Federal-aid highway system, $165 million for projects on the Federal-aid secondary system, $137,500,000 for projects on the Federal-aid highway system in urban areas, and $25 million for projects on the National System of Interstate Highways. This is the first time that funds have been provided specifically for the Interstate System.

Funds will be expended under the supervision of the Bureau of Public Roads and according to the general procedure in use for many years in which state highway departments propose projects, prepare plans, award contracts, and supervise construction, all subject to Federal approval. Federal participation is limited to half the cost except in the public-lands states where participation may be increased above 50 percent by one-half of the percentage of the area of the State that is public land. Broadly defined, a public-land state is one in which unappropriated public lands and non-taxable Indian lands exceed 5 percent of the total state area.

Funds for the Federal-aid highway system are apportioned in proportion to area, population and mileage of post roads, each being given equal weight. Funds for Federal-aid secondary roads

are apportioned in the same manner except that rural population is used rather than total population. Funds for urban projects are apportioned in proportion to population in municipalities and other urban places of 5,000 or more. Funds for the Interstate System are apportioned in the same manner as those for the Federal-aid primary highway system. The funds apportioned will be available for expenditure until June 30, 1956.

The accompanying table shows apportionment by state after an allowance for administration and research has been deducted from the total authorized $575 million.

APPORTIONMENT BY STATES OF FEDERAL-AID HIGHWAY FUNDS
FOR FISCAL YEAR BEGINNING JULY 1, 1953

State	Fed.-aid Primary Hwy. System ($247,500,000)	Secondary or Feeder Roads ($165,000,000)	Urban Highway ($137,500,000)	Interstate System ($25,000,000)	Total
Alabama	$ 5,217,552	$ 4,043,898	$ 1,758,127	$ 532,314	$11,551,891
Arizona	3,653,303	2,487,990	521,973	371,953	7,035,219
Arkansas	4,064,364	3,254,652	750,706	414,318	8,484,040
California	11,273,990	5,808,764	11,929,002	1,154,002	30,165,758
Colorado	4,402,054	2,940,172	1,115,307	448,362	8,905,895
Connecticut	1,571,238	800,250	2,598,965	161,200	5,131,653
Delaware	1,200,375	800,250	275,217	121,250	2,397,092
Florida	3,903,613	2,550,784	2,406,316	398,804	9,259,517
Georgia	6,059,367	4,627,705	1,955,727	618,094	13,260,893
Idaho	3,033,324	2,132,917	258,267	308,736	5,733,244
Illinois	9,415,818	5,124,593	9,384,933	963,234	24,888,578
Indiana	5,833,702	4,020,406	3,210,481	595,500	13,660,089
Iowa	5,915,625	4,328,851	1,593,160	602,769	12,440,405
Kansas	5,950,738	4,165,742	1,261,297	605,853	11,983,630
Kentucky	4,496,820	3,736,080	1,393,596	459,028	10,085,524
Louisiana	3,812,021	2,759,226	1,967,149	389,375	8,927,771
Maine	2,061,148	1,474,586	560,854	210,101	4,306,689
Maryland	2,151,491	1,314,877	2,277,541	220,394	5,964,303
Massachusetts	3,102,505	1,149,426	5,585,538	318,932	10,156,401
Michigan	7,594,942	4,633,662	6,245,790	776,456	19,250,850
Minnesota	6,444,508	4,545,371	2,185,224	656,907	13,832,010
Mississippi	4,357,237	3,632,971	742,978	444,235	9,177,421
Missouri	7,127,588	4,822,289	3,304,889	726,976	15,981,742
Montana	4,957,442	3,409,119	315,997	504,310	9,186,868
Nebraska	4,751,285	3,369,779	787,065	483,631	9,391,760
Nevada	3,174,465	2,121,392	102,203	322,835	5,720,895
New Hampshire	1,200,375	800,250	397,419	121,250	2,519,294
New Jersey	3,175,262	1,071,050	5,874,465	326,438	10,447,215
New Mexico	4,003,539	2,749,711	440,412	407,468	7,601,130
New York	11,527,309	4,622,354	17,937,120	1,182,803	35,269,586
North Carolina	6,048,757	5,170,669	1,724,427	617,527	13,561,380
North Dakota	3,562,057	2,585,761	226,915	362,325	6,737,058
Ohio	8,609,919	5,240,955	7,765,686	880,712	22,497,272
Oklahoma	5,245,994	3,755,923	1,466,130	534,576	11,002,623
Oregon	4,198,212	2,933,480	1,076,050	427,813	8,635,555
Pennsylvania	9,582,120	5,699,723	10,159,251	981,618	26,422,712
Rhode Island	1,200,375	800,250	959,321	121,250	3,081,196
South Carolina	3,291,443	2,726,238	923,122	335,960	7,276,763
South Dakota	3,827,991	2,733,672	260,648	389,370	7,211,681
Tennessee	5,293,910	4,127,446	1,940,548	540,208	11,902,112
Texas	15,842,002	10,607,168	6,428,891	1,615,515	34,493,576
Utah	2,824,094	1,868,149	568,628	287,607	5,548,478
Vermont	1,200,375	800,250	208,950	121,250	2,330,825
Virginia	4,645,445	3,611,080	2,092,640	474,439	10,823,604
Washington	4,064,587	2,715,106	2,024,855	414,845	9,219,393
West Virginia	2,678,927	2,330,488	873,369	273,683	6,156,467
Wisconsin	5,802,073	4,047,423	2,627,837	591,968	13,069,301
Wyoming	3,053,021	2,068,920	145,912	310,556	5,578,409
Hawaii	1,200,375	800,250	451,260		2,451,885
District of Columbia	1,200,375	800,250	1,159,334	121,250	3,281,209
Puerto Rico	1,269,948	1,327,682	1,153,508		3,751,138

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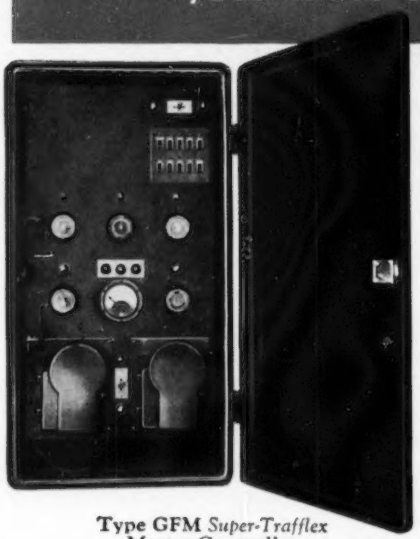

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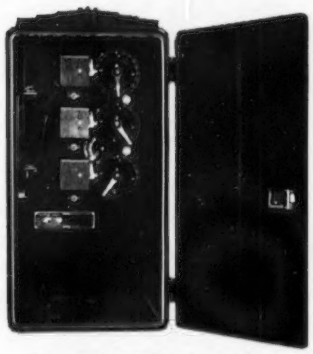

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Type GF-4 Single Dial *Super-Trafflex* Secondary

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8. Controllers remain in step when changed from one dial to another.
9. Controllers remain in step when changed from one time cycle to another.
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General Motors' $194,000 Essay Contest

General Motors is offering $194,000 in cash awards for the best ideas to get America's highway and traffic system "out of the muddle."

The prizes have been posted by GM in a national essay contest, largest of its kind ever attempted, in an effort to stimulate "more nation-wide thinking, discussion and understanding of the facts of our current highway requirements."

C. E. Wilson, president of General Motors, announced the opening of the contest at a dinner held in Detroit Monday, November 10, 1952, attended by many of the nation's leading highway authorities.

Known as the General Motors Better Highway Awards, the competition is open to any resident of the United States, except contest judges and their immediate families.

One hundred sixty-two national, regional and state prizes will be offered to winners, topped by a $25,000 first place national award. Second place national winner will receive $10,000; third place nationally, $5,000; and three national honorable mentions will get $3,000 each.

In addition, General Motors will offer nine awards of $2,500 each for the best essays submitted from nine regional areas of the country.

First place winners in each of the 48 states plus the District of Columbia will receive $1,500 each. Two honorable mention awards for each state and the District of Columbia will be $500 each, a total of 98 state honorable mentions.

The essay subject will be: "How to Plan and Pay for the Safe and Adequate Roads We Need."

Officially underway Tuesday, November 11, the contest closes at midnight March 1. Awards will be announced as soon as possible thereafter.

Entry blanks may be obtained at any General Motors car or truck dealership or by writing to General Motors Better Highways Awards, General Motors Building, Detroit 2, Michigan.

With each entry blank a prospective contestant will receive a Better Highways Award Fact Book. This not only contains contest rules but also outlines basic statistics and facts about the nation's overall highway problem.

Mr. Wilson emphasized that essays will not be judged on literary merit. Rather, criteria will be the essay's originality, sincerity and practical adaptability.

While brevity is suggested, no limitation is placed on the length of the essay. Each contestant may submit any supporting data believed necessary to document his presentation—graphs, charts, drawings, photographs, estimates or other illustrations.

Essays will be judged by a contest board. Five noted men in their respective fields have accepted positions on this board. They are:

Ned H. Dearborn, president of the National Safety Council; Thomas H. MacDonald, commissioner of the Bureau of Public Roads of the U. S. Department of Commerce; Curtis W. McGraw, president and chairman of the board of the McGraw-Hill Publishing Co.; Dr. Robert Sproul, president of the University of California; and B. D. Tallamy, superintendent of the New York State Department of Public Works and president of the American Association of State Highway Officials.

Mr. Wilson explained that the contest is designed to energize "a great national educational program."

"We hope it will get millions of our people thinking and asking questions about the current highway problem," he said. "And we hope it will help answer problems of financing, planning and administration that are involved."

He said he believed the 162 prizes "are substantial enough to attract a tremendous number of entries—to make it worthwhile for a tremendous number of people to study the facts of the highway problem and to think of the facts in terms of their own and the public interest.

He added that General Motors expects "no panaceas, no instant remedies" to cure the nation's highway ills.

"It's going to take time and effort and persistence," he declared. "It will take a lot of money to get us out of this muddle, but it will cost us more to stay in."

Urging a vigorous attack on our highway problem by individuals as well as private and governmental groups, Mr. Wilson summarized our current problem as follows:

Our population has outgrown our highway system.

When we were building our highway system during the 'twenties, no one dreamed people would want and need the 53 million motor vehicles we now have.

When we were laying out the three and one-third million miles of our highway system no one dreamed that we would need to drive our cars and trucks more than a billion miles every day.

During and since World War II, few realized what would result from putting off highway improvement in the interest of all-out national defense.

"This all happened," Mr. Wilson said, "because we didn't dream big enough."

He pointed out that our population will continue to increase for many years to come and that means the need for motor vehicles will continue to increase.

"Instead of the 53 million cars and trucks of today, our people will need and want as many as 80 million cars and trucks 25 years from now," he said.

Expressing the hope that GM's Better Highways Award Contest would inspire public interest in the traffic problem, Mr. Wilson said:

"Only an informed people can act wisely. That's the way we get things done in this country. And although I am concerned about the highway problem, I am not concerned about the action the American people will take once they understand the facts."

LOOKING AHEAD

JANUARY 13-16, 1953—WASHINGTON, D. C.
Annual Meeting, Highway Research Board, Academy of Science Building.

MARCH 1-3, 1953, ATLANTA, GEORGIA
Annual Meeting, Southern Safety Conference and Exposition, Hotel Atlanta Biltmore.

JUNE 29-JULY 3, 1953—ATLANTIC CITY, N. J.
Summer General Meeting, American Institute of Electrical Engineers.

AUGUST 10-12, 1953—LOS ANGELES, CALIF.
Annual Meeting, American Transit Association, Hotel Biltmore.

SEPTEMBER 14-18, 1953—NEW YORK CITY
Annual Meeting, Illuminating Engineering Society, Hotel Commodore.

SEPTEMBER 28-OCTOBER 1, 1953—BUFFALO, N. Y.
24th Annual Meeting, Institute of Traffic Engineers, Hotel Statler.

OCTOBER 5-8, 1953—COLUMBUS, OHIO
58th Annual Meeting, International Municipal Signal Association, The Neil House.

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American Highway Engineers Working In Iraq

Four American highway engineers sailed for Baghdad on November 15 to work with the Government of Iraq, as part of the Point 4 program, on the country's highway improvement program.

The technicians are employees of the New York firm of consulting engineers, Edwards, Kelcey and Beck, which has a contract with the Technical Cooperation Administration of the Department of State to provide technical assistance and engineering advice in the development of Iraq's basic highway system.

The engineers are George T. McDonald of Atlanta, Georgia, who will be chief engineer of the party; Raymond J. Harrington of Oswego, New York, a bridge engineer designer; Rudolph Aebi, Jr., of Newnan, Georgia, and William W. Dawson of Binghamton, New York, highway design and construction engineers.

The contract calls for the engineering party to assist the Point 4 mission in Iraq by cooperating with the Iraq Development Board and the Iraq Department of Public Works in executing reconnaisance surveys, recommending locations of proposed new roads, assisting in the planning and construction of new roads, aiding in the repair and maintenance of existing roads, and carrying on an educational and on-the-job training program for Iraq technicians.

Mr. McDonald has had many years of engineering experience in all phases of road planning, construction and maintenance. Since 1948 he has been executive secretary of the Georgia State Highway Board. Prior to that he has held such important positions as engineer-director and chief engineer of the Highway Department of the State of Georgia. He has a civil engineering degree from Syracuse University.

Mr. Harrington was with the office of the Borough President of Manhattan for 25 years as a civil engineer before joining Edwards, Kelcey and Beck in 1951 as chief engineer of bridge designs. He has a civil engineering degree from Syracuse University and a master of science degree in civil engineering from Polytechnic Institute of Brooklyn.

Mr. Aebi, assistant construction engineer of the Highway Department of the State of Georgia, has been with the Department since 1937, with the exception of three years when he was with the U. S. Engineers as construction engineer in the resident engineer's office, Camp Davis, Wilmington, North Carolina. He attended Iowa State College, majoring in civil engineering.

Mr. Dawson has been a highway consulting engineer with U. S. Consultants, Inc., in Tokyo since 1951. He has worked for private construction companies in California, Oregon, Washington, Utah and Wisconsin. He is a graduate of Northwestern University with a degree in civil engineering.

To obtain technical assistance for its development program, Iraq entered into a Technical Cooperation Agreement with the United States on April 10, 1951.

Iraq has sizeable sums of money available for economic and social development. To obtain effective use of these funds, a Development Board was created by legislation in 1950 to administer the 70 percent of the oil income which is allocated for development purposes. In addition to oil, Iraq has valuable resources. There is an enormous supply of water in the Tigris and Euphrates rivers, and vast areas of fertile land susceptible of irrigation.

The purpose of the Point 4 program in Iraq is to assist the Government in carrying out its program. The development of Iraq's resources will contribute to raising the standards of living of its people. Simultaneously it will assist in maintaining and further stabilizing the government, and enable the United States and Iraq to cooperate in a mutually beneficial relationship. The American technicians requested by Iraq are specialists in the fields of agricultural services and improvement, health and sanitation including disease control, vocational education, natural resources utilization including water reclamation and irrigation development, road design and construction, minerals survey and land resettlement.

Tokyo Reports Increasing Traffic Congestion

According to a traffic survey carried on in January last, motor traffic was found to be heaviest at the crossing near Miharabashi bridge, Chuo ward, where the peak number of 4,000 cars an hour was obtained on a fine day.

The survey also showed that more than 10,000 cars were observed in a single day at 31 points in the city, the number being the highest record. Considering the increase in the number of cars in 1951 to 18,000 and their average increasing rate during the first six months of this year, 2,000 per month, (the total number of increase in the period as of June 30 was 101,300), the number of cars that pass those points to-day is estimated to be much greater than the above figures.

The population in the total metropolitan ward area increased 362,000 last year (the total population in the area as of December 31, 1951 was 5,877,831), and the number of registered bicycles totaled 130,000 (the total number as of December 31, 1951 was 720,948). This means that pedestrian and bicycle traffic has been keeping pace with that of motor cars.

As a result of increased traffic congestion traffic accidents have become so frequent that the number reached 5,169 in the first six months of this year, showing an increase of 60 per cent as compared with that in the corresponding period last year. This was the highest record in the figures for each half-year period after the war, and the increasing tendency is likely to continue.

For prevention of traffic accidents various kinds of devices have recently been adopted by the city authorities.

One of these is go-type automatic signaling at the crossing. In this device all the signals at certain street crossings are made to change their go-stop sign automatically at regular intervals so that cars operated on those lines will not be required to stop irregularly by a red sign if they observe a certain speed limit.

This automatic signaling was in use in certain areas in the city even before the outbreak of the Pacific War, but was discontinued one after another and completely fell into disuse in wartime.

Recently the device has been revived or newly erected on three main lines in the metropolitan area, resulting in an alleviation of traffic jam and its adoption on other four lines are now under consideration.

Tokyo Municipal News

New Booklet on Problems of Transit Issued

Pointing out that city streetcar and bus systems carry 16 billion passengers a year, including 60 to 80 per cent of workers and shoppers, the Chamber of Commerce of the United States has issued a booklet calling on business men to help solve some of the problems

which are driving many transit firms into municipal ownership.

Some of the problems of private transit companies were listed as follows: Most of their service is provided during morning and evening rush hours and most of their equipment is idle the rest of the day; 60 per cent of every dollar they take in goes out in wages and wage costs have risen 110 per cent in 10 years while the cost of vehicles and repairs has jumped 95 per cent; since fare increases must be approved by state and local regulatory bodies, there are long delays before cost increases can be offset by higher fares; discriminatory street-use taxes are levied on transit firms even though everyone uses the streets.

As a result of these conditions, the Chamber said, the transit industry is earning only a 1.5 per cent return on its value, whereas the average return for 3,409 leading industrial firms in 1951 was 11.4 per cent.

The Chamber urged city officials, business groups and civic organizations to promote:

1. Greater use of limited stops, turnbacks and express service by streetcar and bus lines.

2. Use of one-way streets, elimination of curb parking, restriction of turning movements and use of modern traffic signal systems to speed public transportation.

3. Elimination of unwarranted extensions and other unprofitable services by streetcar and bus companies.

4. Greater use of streetcars and buses by shoppers and workers especially in the non-rush periods.

5. Staggering of working hours for employees by large business and industrial firms to spread the rush hour load.

6. Prompt consideration of requests for fare increases and swift relief if warranted.

7. Relief from unfair local taxes and special assessments on transit companies.

Poor earnings and rising costs have forced many private transit firms into public ownership where direct and indirect tax subsidies were possible. But, the Chamber stated, public ownership generally has only made the problem worse.

"Without adequate fares, the municipality must subsidize transit operation (leading) to enormous deficits which must be paid for by increased taxes. Politicians have found that operation of public transit can be a political liability rather than a political asset in some cases. Politics enters into employee relations, often resulting in inordinately high wage scales.

". . . It is a well known fact that the private owner of a transit company keeps his bookkeeping pencil sharper than any municipal operator."

The Chamber's transit proposals are contained in a booklet entitled "Transit's Crisis . . . Businessman's Concern," and available at 5c each or $4.50 per hundred on request from the Chamber's Transportation and Communication Department, 1615 H Street, N.W., Washington 6, D. C.

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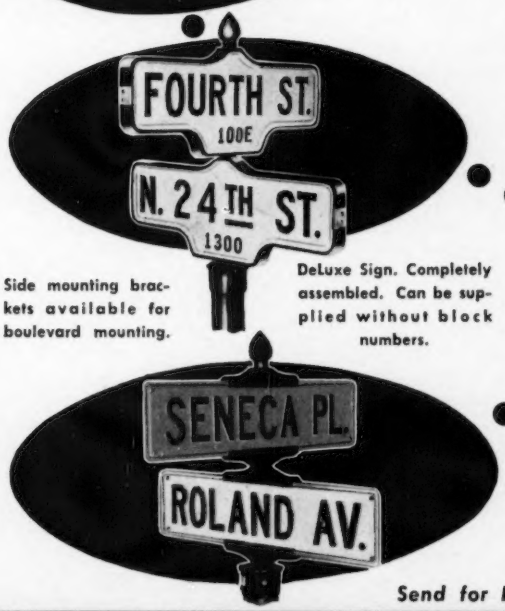

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ITE Student Chapters Reactivated

Two of the four Student Chapters authorized by the ITE Board of Direction have been reactivated for the academic year 1952-53. The Chapters at Cornell University and University of Michigan remain the same.

The University of Illinois Student Chapter first organized in 1947, held its first new term meeting in early October and elected the following officers for the fall term:

James F. Kaar, President; Mitchell J. Mikula, Vice-President; John W. Wilters, Secretary-Treasurer; John R. Leek (Jr. Mem., ITE), Faculty Advisor.

The Yale University Student Chapter comprised of the 21 members of the Bureau of Highway Traffic, Class of 1953, also held its first new term meeting in October to elect the following as officers for the fall term:

Walter Q. Macnee (Jr. Mem., ITE), President; William J. Armstrong, Vice-President; John R. Crosby, Secretary-Treasurer; F. Houston Wynn (Mem., ITE), Faculty Advisor.

The Bureau faculty and staff, the staff of the ITE headquarters office, wives and husbands, joined the class and their wives in a social meeting of the Chapter at the home of Mr. and Mrs. Lowell W. Markert on December 5th to enjoy a delightful "beer and skittles" get-together.

Correction

Last month's issue carried an item entitled "Yale Bureau Luncheon" in which we incorrectly said that Al Forde and Mrs. Siegel were co-chairmen. This sentence should have read "Mr. Forde and Mr. S. T. Siegel were the co-chairmen of the local committee in charge of arrangements for the luncheon."

We regret the error and extend apologies to all concerned.—EDITOR.

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SECTION NEWS

Washington, D. C., Section

The October 29 meeting of the Washington Section ITE was held at the Army and Navy Club with 45 members and guests in attendance. Burton Marsh, Charles Prisk, Jack Ecker, and Robert Holmes reported on various phases of the national ITE convention in Chicago. The rest of the evening was spent discussing public versus private ownership of off-street parking facilities and the speaker of the evening was the President of the National Parking Association, B. M. Stanton, of Norfolk, Virginia.

He told of the fight going on in many cities between those who oppose government ownership and those with private capital invested in parking lots and garages. He told of his own situation where the city was planning to take over his and other privately owned lots in order to set up a municipally owned system, and of how the parking operators were able to obtain a referendum on the municipal ordinance, defeating the plan.

Reported by Henry K. Evans
Secretary-Treasurer

Midwest Section

Over thirty members of the Midwest Section gathered at the Chicago Engineering Club around 6:00 P.M. on Thursday, November 13, for the monthly meeting. After a fine roast beef dinner with trimmings was devoured by everyone, a short business meeting was held.

Ralph Gross, Secretary-Treasurer of the Section, introduced a resolution, suggesting the Midwest Section highly endorse the policy of manufacturers setting up displays at the annual ITE Convention. It was pointed out that not only did the contributions received form the framework for financing the Convention, but the displays in no way decreased attendance at the technical sessions and an increase in activity and hospitality in the headquarters room was also noted. The resolution was adopted unanimously by the Section. Mr. Gross highly recommended that all Midwest Section members attend the forthcoming Fifth Annual Conference on traffic operation on streets and highways to be held at the University of Illinois on December 11 and 12.

Walter Jolish, Chairman of the committee planning the Second Annual Ladies Night and Installation of Officers, which is to be held on Friday, January 16, gave a brief report on the progress of his committee's activities. From all that Walter said it looks as if the ladies are in for a bigger and better evening than they had last year.

After the business was done away with the meeting was turned over to Pete Page, Chairman of the Program Committee, who introduced the speaker of the evening as a man who knows traffic engineering not from the ground up but from the ground down. This whirlwind introduction was for Mr. Victor Hofer, Chief Planning Engineer of Ralph H. Burke, Inc., Consulting Engineers. Mr. Hofer's seven-page article on the "Chicago Park District Builds an Underground Garage" appeared in the October 1952 issue of Traffic Engineering. Mr. Hofer gave a very interesting dissertation on some of the bugs that always pop up in any project of this magnitude. He mentioned that the garage costing about $8,300,000 will have a capacity of over 2,300 cars and the project is being completely financed by revenue bonds. The roof of the garage is to be just four feet below Grant Park along Michigan Avenue and construction work is expected to get into full swing after New Year's Day. Colored lights are to be used to tell parkers where vacant stalls can be found. The garage will offer faster service than is possible in the present multi-storage garages, and due to its size, space will usually be available. After his talk, Mr. Hofer answered a number of questions the members had in regard to various phases of the project. All in all everyone went away with a better understanding of the plans for the largest garage structure to date.

Reported by Daniel J. Hanson
Member Publications Committee

New York Metropolitan Section

The fifth meeting (luncheon meeting) of the 1951-1952 fiscal year was held November 12 at the Masonic Club. Twenty-nine members and guests were present at this meeting.

The meeting was confined to business and the election of new officers. By unanimous ballot, Mr. Edmund Ricker was elected President, Mr. Richard Strickland, Vice-President, and Mr. Nathan Avins, Secretary-Treasurer. In order to comply with the constitution, which requires a written ballot, the Secretary-Treasurer cast one written ballot.

The Section was honored by the presence of Mr. M. Mansfield Todd, Secre-

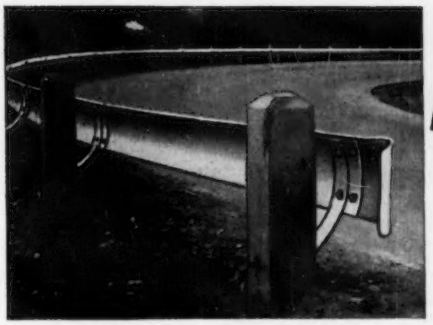
tary of the Institute of Traffic Engineers, who gave a brief talk on the quotas set forth by the Institute in the membership drive for the coming year. The New York Metropolitan Section's quota for new members is 40. Mr. Todd explained the qualifications necessary for new applicants. Mr. Cherniack urged that the members give personal attention to new applicants in helping them to qualify.

Mr. Herbert Keegan, who was appointed by the President to work with the Greater New York Safety Council in planning for an Institute of Traffic Engineers session at the coming Safety Council meeting in the spring, has requested Mr. Merwyn Kraft and Mr. Robert Allen to work with the members of the Greater New York Safety Council in arranging these sessions.

Mr. Edmund Ricker, the new President, announced that the next meeting will be held on Wednesday, December 10, 1952.

The meeting was adjourned at about 2:30 P.M.

Reported by Louis E. Bender
Secretary-Treasurer



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Michigan Section

On October 30, 1952, a technical dinner meeting was held at the Park Lane Hotel in Toledo, Ohio. There were 51 members and guests present, all of whom were well pleased with the program set up by Paul Robinette, City Traffic Engineer of Toledo.

The "Headquarters Suite" was open at 4:00 p.m. for the early arrivals and card playing, refreshments and general conversation was indulged in until dinner was served at 6:30 p.m. The Swiss steak and ice cream were delicious, after which the business meeting was held.

All of the members and guests were introduced and our appreciation to the vendors responsible for the refreshments was expressed. Mr. Arnold Finch, City Manager of Toledo, was introduced and welcomed the group on behalf of the City.

President Sherman appointed Al Malo, Carl McMonagle, Joe Wehmeyer and Fred Meno to select 3 candidates to compete for the Junior Engineering Award being presented by the Engineering Society of Detroit. This award is being made in an attempt to give early recognition to the younger engineers.

An announcement was made regarding the Registration Refresher Courses being offered by the Engineering Society beginning on January 10, 1953.

President Sherman announced that the National ITE has requested that the Michigan Section make a concentrated effort to increase our membership by 30 people.

Jerome Franklin, a member of the Legislative Committee, gave a report on what progress they have made. He indicated that reliable contacts had been established so that we would be in a position to receive notice of pending legislation regarding traffic matters prior to its enactment by the State Legislature.

Mr. Harold Eckhart, Division Traffic and Safety, Department of Highways, State of Ohio was the main speaker of the evening. His topic was Signs and Markings as used by the Ohio State Highway Department, and some of the new innovations which they have been working on in connection with shapes and symbols to replace long worded messages. Slides were used in conjunction with the lecture and included pictures of the modern sign shop in use by their Department. The lecture was extremely interesting and induced many questions and comments upon its completion.

The next meeting was set for November 20th at the Rackham Building in Detroit which was to be in conjunction with a regular meeting of the Engineering Society of Detroit, and which will have a fine traffic program after dinner.

Reported by Sven Kansman
Secretary-Treasurer

To The ITE Wives

(and girl-friends, naturally!) the old man's employer has probably furnished a copy of the

TRAFFIC ENGINEERING HANDBOOK

prepared by the Institute of Traffic Engineers for his office use, but now that you are thinking about an extra nice Christmas present for that extra nice guy, why don't you give him a copy for his very own, to help him with that homework. Looks nice on your library shelf, and will give you opportunity of eliminating one excuse for his working late at the office!

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Secretary's Column

Last month I wrote about the ITE Sustaining Organizations. The same issue carried a story on the drive for new ITE members launched by Bob Holmes' Committee on New Members at the Annual Meeting in Chicago.

I've had the privilege of making brief remarks relative to membership qualifications at recent meetings of both the New England and New York Metropolitan Sections. In support, at New England President Hugh Wynn, and at New York Nat Cherniack both made the same point, a point that I feel should be brought home to every ITE member. It's simply this—every member knows at least *one* non-member working in traffic engineering who should belong to the Institute.

I hope every member will take the time to review the membership requirements set forth on pages 53, 54 and 55 of his 1952 Yearbook. In case you've mislaid your copy, drop me a line and I'll send you another pronto. Examine closely the experience classifications for the five branches of traffic engineering (page 54) and compare the requirements against the qualifications of your non-member associates and friends in traffic engineering or related work. After assuring yourself that at least one can qualify, ask me to forward application blanks either in his behalf or directly to him.

Then help him fill out the forms, insisting that he supply full details of his traffic engineering experience. Make sure that at least two—preferably all—of his references are ITE members who are fully familiar with his traffic engineering experience. All references must be members of either ITE, or the American Societies of Civil, Chemical, Mechanical, or Mining and Metallurgical Engineers. References must represent at least three different employers. Explain in detail to the applicant that extensive experience or qualification in each of at least three of the five branches is required for Full Member; whereas experience in only one branch is required for Associate or Junior membership.

If every member will make a personal project of steering at least one person into membership the goal set by the Committee on New Members will be reached long before the Buffalo meeting. Let's go fellows!

* * *

On Monday, December 8th, the girls of the Bureau of Highway Traffic joined ITE Headquarters staff in surprising Miss Bridget Pellegrino, senior member of the ITE staff, with a little party in the office in celebration of her birthday.

Tuesday, December 9th, Miss Pellegrino reversed the surprise and threw all of the Strathcona Hall people into a dither by appearing with a diamond ring adorning the third finger of her left hand. The lucky man is Mr. Ralph Castellon of New Haven. The wedding will be in the early spring of 1953.

TIM TODD

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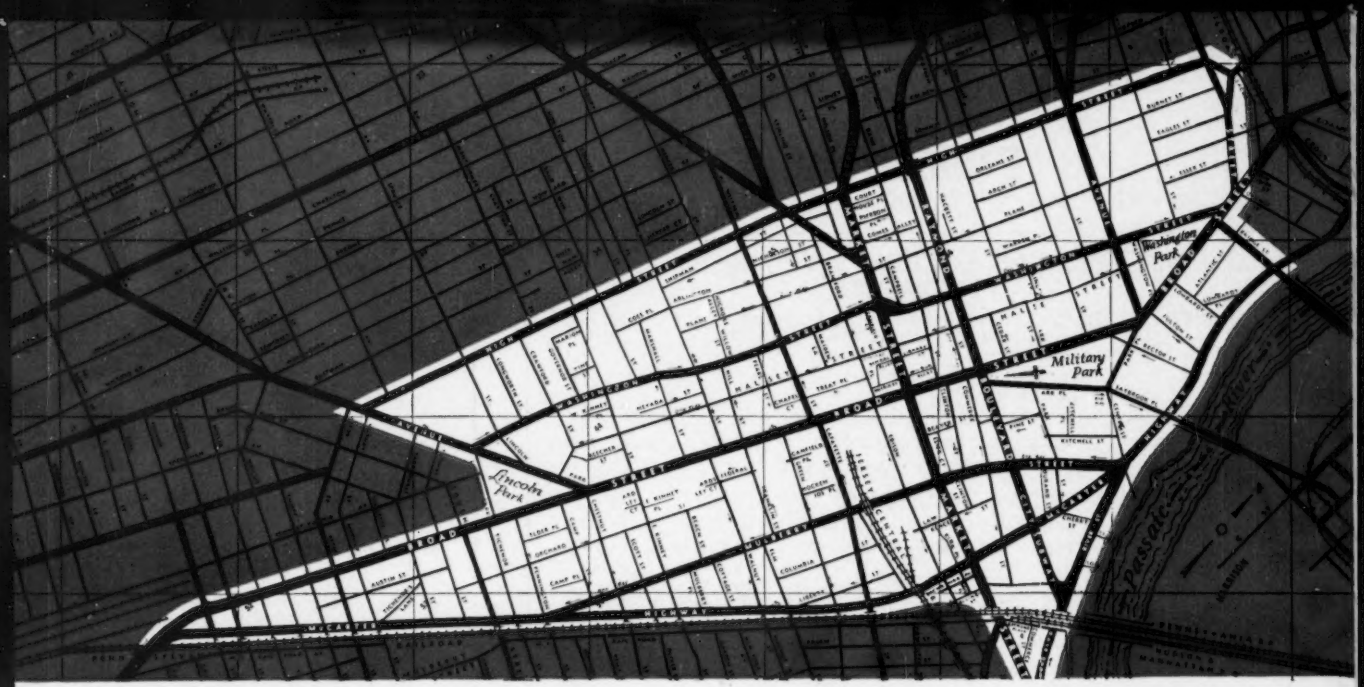

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HEART OF SYSTEM is G-E central control panel. Discussing progressive-timing control are Newark's Public Safety Director J. B. Keenan, at left, and Traffic Engineer E. L. Cyr.

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